LEGACY Program

Randomized Controlled Trial

Endline Report

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Executive Summary

In April 2016, Save the Children International (SCI) launched a maternal and child cash transfer program (MCCT), LEGACY (Learning, Evidence Generation, and Advocacy for Catalyzing Policy). The program was implemented in three townships across Myanmar's central dry zone and is comprised of two interventions targeting pregnant women and mothers of young children:

1. A monthly **cash transfer** to mothers in their last two trimesters of pregnancy until the child turns two years old ("first 1000 days"); and
2. A monthly **Social and Behavioral Change Communication (SBCC)** activity supplementing the cash transfers, covering a range of topics related to nutrition and child health.

Innovations for Poverty Action (IPA) worked with SCI and collaborated with researchers from the University of Michigan and Duke University to design an experimental evaluation of the LEGACY program to measure its impact on child nutrition.

Villages in the three study townships were randomly assigned into three groups. In the first set of villages, women who were at least four months pregnant received both the cash transfers along with the SBCC (*Cash+SBCC*). Another set of villages received only the cash transfers (*Cash-Only*), and a third set of villages did not receive any intervention (*Control*).

Through an extensive endline survey, IPA collected high-quality survey and biomarker measures, including height of children; dietary diversity; antenatal care (ANC) practices; infant and young child feeding (IYCF) practices; water, sanitation and hygiene (WASH) measures; and other health and economic indicators.

Two years after program delivery, our findings showed a 4-percentage point (13 percent) reduction from 30% to 26% ($p < 0.1$) in the proportion of stunted children (6 to 29 months old) among those covered by the *Cash+SBCC* intervention, compared to the *Control* group. This was driven by a 4.4 percentage point reduction ($p < 0.05$) from 24% to 19.6% in the proportion of moderately stunted children. Moderate wasting also improved in the *Cash+SBCC,* showing a 2.8 percentage point reduction ($p < 0.1$) from 11% to 8.2% in the proportion of moderately acutely malnourished children (MAM), compared to the *Control* group. Findings also show that the reduction of stunting is more pronounced for children covered by the program for longer (24 to 29 months-old children), changing from 36% to 30.6%, a 5.4 percentage point reduction ($p < 0.1$). Moreover, these changes are concentrated among lower socioeconomic status households as defined by average level of women's education

in the village. Our analysis of the program's impacts on child health also reveals significant impacts on several *immediate* and *underlying* determinants of nutrition, including dietary diversity, breastfeeding, health-seeking behavior, hand washing practices, and food expenditures. We finally explore potential effects on other outcomes, such as debt, savings, women's decision making, desired fertility and family planning, usage of cash transfers, and exposure to SBCC.

Our findings underline the importance of complementing cash transfer programs with behavioral interventions such as SBCC and the value of ensuring coverage for children throughout their first 1,000 days of life.

1. Introduction

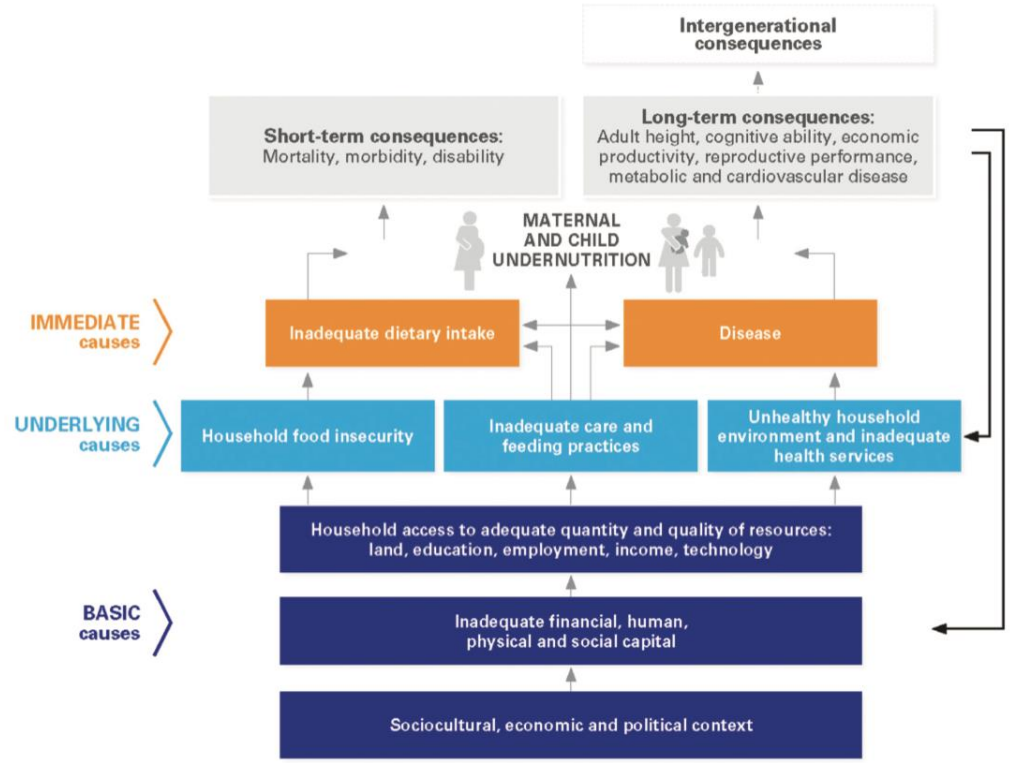
Despite improvements in the past two decades, child malnutrition remains a serious health issue and one of the main contributors to under-five child mortality in developing countries, affecting more than 150 million children (World Bank, 2017). In Myanmar, approximately 1.6 million (35%) of children under five are stunted. Stunting begins in-utero, with 14% of infants under six months of age already stunted, and nutrition further deteriorates for children between 9 and 30 months of age. Stunting in Myanmar varies by location, reaching levels as high as 50% in the poorest states (UNSCN, 2010).

Adequate nutrition in early life is crucial to realizing an individual's full health potential throughout their life. Medical and social science research have identified the in-utero phase and the first two years of life as the most critical periods for determining future outcomes related to human capital (Almond and Currie, 2011). Inadequate nutrition during this period leads to higher susceptibility to illness, poor physical status, and impaired physical and cognitive ability later in life (Hoddinot et al., 2013a). This may result in lower human capital accumulation, loss of productivity, and lower earnings in adult life, contributing to an inter-generational transmission of poverty (Engle et al., 2007; Hoddinot et al., 2013b).

The high prevalence of chronic child undernutrition in many developing countries has spawned a large body of research on possible explanations. Following the conceptual framework in UNICEF 2015 (Figure 1), studies have attempted to address the causes of malnutrition focusing on the *immediate determinants*, such as micronutrient deficiencies (Muller et al., 2003; Newton et al., 2007; der Merwe et al., 2013) and child health status, among others. Alternative interventions have focused on the *underlying determinants* of malnutrition, such as household income and food insecurity (Manley et al., 2013), poor quality diets and food systems (Headey et al.,

2012), knowledge and resources of caregivers (Paul et al., 2011; Prina and Royer, 2014), and inadequate hygiene and water infrastructure. Evidence suggests that some of these interventions (Bhutta et al., 2013; Ruel and Alderman, 2013; Gillespie et al., 2013; and Haddad et al., 2015) can be effective in improving maternal and child nutrition. However, while there is a solid understanding of the causes of chronic child undernutrition and effective interventions addressing the *determinants* of child malnutrition have been in place, the evidence on programs proven to be effective in changing measures of malnutrition per se (stunting, wasting, underweight) is more limited. Measures of chronic malnutrition, such as stunting, are particularly hard to change since long-term programs covering the critical window of the first 1,000 days in a child's life are often costly and difficult to implement on a large scale.

Figure 1: UNICEF Conceptual Framework of the Determinants of Child Malnutrition



The black arrows show that the consequences of undernutrition can feed back to the underlying and basic causes of undernutrition, perpetuating the cycle of undernutrition, poverty and inequities.

Source: Adapted from UNICEF, 1990.

Source: UNICEF, 2015

To combat the intergenerational transmission of poverty, governments, NGOs, and international agencies have adopted cash transfer programs in recent decades designed to bolster the nutrition, health, and education of the children of poor families in some low- and middle-income countries (Fiszbein and Schady, 2009). To date, cash transfer programs reach between 750 million to one billion people globally, and have demonstrated a wide range of positive effects, including increases in schooling, entrepreneurship, and earnings of vulnerable populations. However, in a review of 21 papers on the impacts of cash transfer programs on stunting (height-for-age), Manley et al (2013) found that that the programs' average impact on height-for-age is positive, but small and not statistically significant. In their analysis, conditional programs statistically accomplish the same as unconditional ones. Girls seem to benefit more than boys, and disadvantaged areas benefit more than less disadvantaged ones.

Several studies have investigated the impacts of unconditional cash transfers on measures of child nutrition, especially stunting, and the results have shown positive results on stunting and other anthropometric data across several regions (Agüero et al., 2007; Seidenfeld et al., 2014; Schady and Paxson, 2010; León and Younger, 2007; Macours, Schady, and Vakis, 2012; Levere et al., 2016).

Research in epidemiology and economics on the role of information campaigns to improve health outcomes (Bhutta et al., 2013) has not always been positive (Luo et al., 2012). Recent research shows that SBCC is key to promote infant and child feeding practices that combat chronic malnutrition, such as breastfeeding and dietary diversity (Avula et al., 2013; Hoddinott et al., 2017, Hoddinott et al., 2018). In one study from Bangladesh, Kim et al. (2018) evaluate the impact of exposure to varying intensities of SBCC and found sustained positive impacts on infant and young child feeding knowledge and practices. These patterns are especially concentrated in areas that received regular and continuous SBCC exposure as opposed to areas with infrequent SBCC activities, highlighting the importance of frequency in information delivery. In a systematic review of effectiveness of SBCC approaches, Lamstein et al. (2014) emphasize that using multiple SBCC approaches and channels to change behaviors is more effective than using one, targeting multiple contacts has a greater effect than targeting only women alone, and more visits or contacts result in greater change. However, such comparisons are not well-tested in the literature, and there is still a need to determine exactly when during a woman's pregnancy or a child's life such practices should be promoted.

2. Overview of the LEGACY Program

In collaboration with government and non-governmental partners, SCI implemented the LEGACY program in Myanmar's dry zone (Pakkoku, Yesagyo, and Mahlaing Townships in Mandalay and Magway Regions), with the aim of improving the nutritional status of pregnant women in their last two trimesters and their newborn children up to when they turn two years old.

Eligible participants were residents of the selected villages in their second and third trimester of pregnancy. Program beneficiaries received monthly cash transfers of 10,000 MMK[1] for the remainder of their pregnancy and for (at least) the first 23 months of their newborn's life (maximum is 29 months). The cash transfers were meant to facilitate the purchase of nutritious foods and enable access to proper healthcare services. A subset of beneficiaries received regular SBCC activities in addition to the cash transfers *(Cash+SBCC)* in the form of detailed monthly sessions focused on infant and young child feeding practices (IYCF), health-seeking behavior, hygiene, and household expenditures.

2.1. Program Implementation

The LEGACY program was implemented by SCI in collaboration with the Myanmar Nurse and Midwife Association (MNMA), Pact Global Microfinance (PGMF), and the Township Health Department from the Pakokku Township. A timeline is described in Figure 2.

Cash Delivery: PGMF Intervention Model

PGMF managed monthly cash disbursement through its network of loan agents within the project townships and created an ad-hoc bank account for each LEGACY beneficiary where the money was transferred to on a monthly basis. Each month, PGMF agents conducted two visits to the village: in the first visit, each mother was asked to specify the amount of money to withdraw from her Maternal and Child Cash Transfer (MCCT) account, which was distributed by PGMF agents during the second visit. PGMF created the first MCCT accounts for the initially enrolled beneficiaries in May 2016, and the first round of cash disbursement took place in June 2016.

Enrollment and Behavior Change Communication: MNMA

MNMA coordinated the sensitization and enrollment of eligible women in the program. The initial enrollment phase was launched in 248 villages in April and May

[1] In October 2017 program implementers increased disbursements from 10,000 MMK to 15,000 MMK per month.

2016, with 1,422 women enrolled in the initial launch. Since then, newly pregnant women were enrolled on a monthly basis until May 2018, and PGMF finished disbursing the monthly cash transfers by the end of November 2018. In total, the MCCT covered 11,588 women in 338 villages.

MNMA was also responsible for organizing SBCC activities in the 146 villages assigned to the SBCC treatment arm. Since May 2016, MNMA implemented SBCC interventions **(Module 1)** to support individuals, households, groups, and communities. The aim was to:

1. Promote specific individual and group **maternal nutrition and IYCF behaviors** during the first 1,000 days.
2. Shift attitudes, social structures, and norms to create environments that promote and provide **support for positive social and behavior change** in nutrition, health seeking behavior, and hygiene.
3. **Mobilize communities** to address poor nutrition and the factors causing stunting.

MNMA organized activities included:

1. **Mother-to-mother support groups,** monthly village groups to disseminate information, discuss and share experiences, and serve as a trial for new practices.
2. **Community "rethinking sessions,"** exercises to explore the beliefs, perceptions, and current practices around child and maternal nutrition practices targeting community members, mother-to-mother support groups, and village development/health committees.

Based on information gathered during early implementation of SBCC activities, SCI designed *intensive behavior change interventions* (**Module 2**), including prioritized key behaviors for SBCC activities. MNMA staff were trained on Module 2 activities between November and December 2016, and the interventions were launched across project villages in January 2017, covering various health and nutrition topics.

In addition, MNMA also held two types of sessions targeting household members who could potentially influence and support the mothers' and children's health, hygiene, and nutrition: a "Men Education Session" for husbands and fathers and an "Elderly People Session" for mothers-in-law and grandmothers. MNMA delivered one SBCC session on one topic per month in each village for the three target groups from January 2017 to April 2019. However, during most months, priority was given to the mother-to-mother support groups (for pregnant and nursing mothers) over the other two groups.

In March 2018, one additional SBCC activity was introduced: individual nutritional counseling services for mothers experiencing difficulties with breastfeeding and complementary feeding. In February 2018, the MNMA team identified mothers who would benefit most from one-on-one counseling, and the selected mothers received at least two counseling sessions from MNMA staff between March 2018 and April 2019.

3. Methodology and Data

An important objective of the implementation of LEGACY is to generate robust evidence to set the foundations for nutrition-sensitive policy advocacy for the Government of Myanmar. In this framework, IPA designed a randomized controlled trial (RCT) to measure the causal impact of the program on the health and nutrition outcomes of target beneficiaries.

Under this experimental study (RCT), the unit of analysis (e.g. village) is randomly assigned into a study group. Random assignment ensures that all villages have the same chance of being assigned to any group, and that as long as the groups are large enough, they will on average be statistically identical. Any change which we observe between the groups can then be attributed entirely to the program, rather than external or unobserved factors.

The first step in the randomization process was to group villages based on sub-rural healthcare center catchment areas (henceforth referred to as "clusters"). A total of 102 clusters were grouped into 34 triplets that serve as geographical strata. Within each triplet, individual clusters were randomly assigned to either one of the following groups:

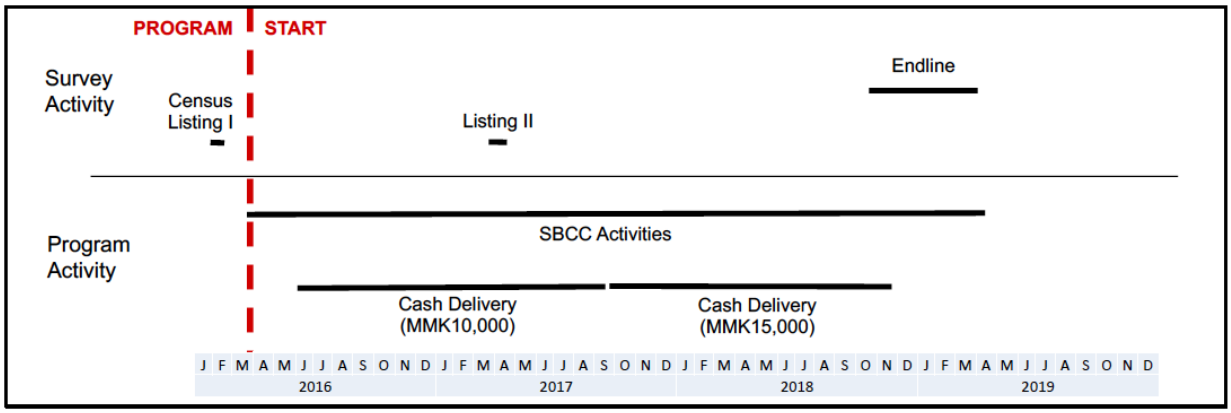
- **Treatment group 1 (T1 – *Cash+SBCC*):** 34 sub-rural healthcare catchment areas, encompassing 142 villages, that received joint cash transfers and SBCC activities.
- **Treatment group 2 (T2 – *Cash-Only*):** 34 sub-rural healthcare catchment areas, encompassing 146 villages, that received only cash transfers. Minimal information about the main purpose of the cash transfers was communicated via pamphlet or large poster advertisement.
- **Control group:** 34 sub-rural healthcare catchment areas, encompassing 149 villages, where no LEGACY activity took place.

Randomizing within clusters improves the expected balance of observable characteristics across groups. Although 437 villages were considered part of this RCT, only 429 villages are part of our analysis sample as eight had no eligible respondents

(women in the last two trimesters of pregnancy or women of childbearing age based on age and child parity).

Data collection for the endline survey was conducted in all study villages to gather evidence on potential effects of the LEGACY program, measured about 30 months after MCCT program implementation began, and about 21 months after the start of SBCC implementation. The final round of data collection for the RCT was completed in March 2019. Figure 2 below shows the timeline of survey and program activities.[2]

Figure 2: Timeline of Program and Survey Activities



Source: own elaboration.

3.1. Sample Description

A total of 5,097 women were invited to participate in the study. Field teams recorded women who were absent during the first visit and scheduled two additional follow-up visits to minimize attrition, or the loss of parts of the sample over time. Specialized tracking teams collected updated information on respondents' new locations and coordinated efforts to track all women that had moved out of project areas (see Figure 3).[3] Only 2.4% of the original sample was absent or not found during the endline data collection. Overall, IPA enumerators interviewed 4,972 mothers (3,464 from the pregnant mother sample and 1,508 from the childbearing women sample). Table 1 displays the main reasons for attrition of the missing 125 respondents.

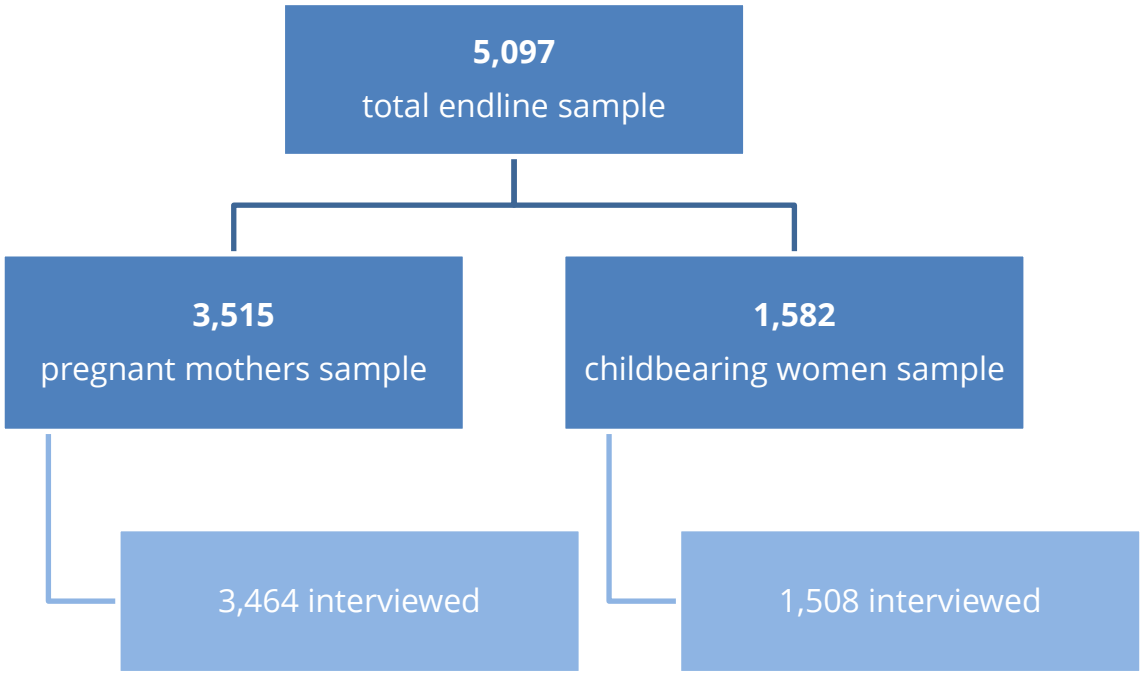
[2] A more detailed discussion of the research design, randomization, and census data collections can be found in the Research Protocol and Census and Randomization Report (submitted to SCI in September 2016). Recall that baseline was conducted in June-August 2016, when program activities already started. Because of problems encountered during baseline which would have invalidated our results, the endline sample has been re-sampled from listing in 2017 (in addition to listing 2016). Thus, the baseline sample is different than the endline sample and will not be used in the analysis. See Midline report (submitted to SCI 2018) for further details.

[3] Figure 3 shows the number of mother respondents who provided consent to participate in endline survey. The children information for the mothers who did not provide consent was not available in endline survey.

Table 1: Reasons for Attrition

Reason	Frequency	Percentage
Refused to answer survey	4	3.2%
Moved out of the project area[4]	65	52.0%
Moved within the project area	11	8.8%
Had mental health issues	1	0.8%
Was constantly travelling	1	0.8%
Ghost respondent[5]	43	34.4%

Figure 3: Endline Sample - Mother Respondents



[4] The majority of women moved to China and Thailand. A few moved along the border with China in Shan State, the Thai border in Kayin State, and Rakhine State.

[5] "Ghost respondents" are defined as women that no one in the village tract claims to know and/or wants to share information about after four follow-up visits (twice by enumerators and twice by back-checkers).

The average household size in our sample is 4.8, with an average 2.1 children. The age of the respondents ranged from 17 to 63 with a median of 32. For the cases where the respondent was travelling and not present during the endline survey, we administered the questionnaire to the household head or the caregiver of under 5 years old children. As a result, we find a few respondents who were over 60 years old. Women-headed households represent less than 2% of the sample. The number of completed years of formal education of the household head is not more than six, which is equivalent to grade 5 in the Myanmar Basic Education System. The majority of household heads (more than 80%) had worked in the last three months and the average household income for this same period was between 609,427 MMK and 667,589 MMK.

Table 2 shows the distribution of children in our sample by age groups according to the IYCF Indicators age categories. We also include children between 24 to 29 months old, not part of the IYCF categories, as we also consider this age group for the purpose of this study.

Table 2: Distribution of Children by Age Group

Age group/ Sample Type	Total Sample Children	Children from Pregnant Mother Sample	Children from Childbearing Women Mother Sample
0 - 5 months	119	96	103
6 - 8 months	91	40	51
6 - 9 months	129	55	74
6 - 11 months	184	78	106
6 - 23 months	1,049	757	292
12 - 15 months	90	17	73
12 - 17 months	129	21	108
18 - 23 months	736	658	78
20 - 23 months	691	652	39
6 - 29 months	3,098	2,787	311
24 - 29 months	1,991	1,974	17

3.2. Endline Survey Structure

The endline survey included the modules detailed in Table 3. The current report organizes the indicators following this endline survey structure.

Table 3: Endline Survey Modules

Modules	Description
Household Roster	• Name, age, gender, education, and literacy for all household members • Main occupations of household members, working status, and type of work
Anthropometric Measurements	• Middle Upper Arm Circumference (MUAC) for mothers and children • Height and weight measurements for children (6-29 months)
Consumption and Expenditure	• Food consumption in last 7 days • Other expenditures in last 12 months
Healthcare Seeking	• Antenatal and postnatal care practices • Child delivery information • Childhood illnesses and health seeking behavior
Food security, IYCF Awareness and Practices	• Child Dietary Diversity Score • Women Dietary Diversity Score • Knowledge about IYCF practices • Breastfeeding • Complementary Feeding
Household Characteristics	• House construction materials and durable assets • WASH practices
Decision Making	• Decision making between spouses regarding household expenditure
Desired Fertility	• Family planning preferences of the respondent and her partner (self-reported) • Use of family planning
Access to Credit, Debt, and Saving	• Access to sources of credit • Existing debts and savings
Cash Transfer and Usage	• Use of cash on food and other expenses
Legacy Program Exposure	• Exposure to project's SBCC materials and participation in project activities • Self-reported Learning and Behavior Changes

3.3. Methodology

As mentioned above, the randomized experiment ensures that individuals in villages assigned to each treatment group (T1 and T2) and the *Control* group are, on average, similar. After checking the data and confirming that variables at the individual (e.g. mother) and village-level are in fact similar in several socio-demographic and geographical characteristics, the analysis relies on the comparison of health and nutrition outcomes at endline across treatment groups and the *Control* group.

The main analysis was conducted at the mother or child level (depending on whether the primary outcome of interest pertains to the mother or child) using regression analysis to compare outcomes among the different treatment and control groups at endline.[6] The regression model accounts for the following variables to control for unobserved characteristics that may vary across clusters, namely: (i) *individual demographic controls*: child's sex, child's age, mother's age, mother's education, household head's age, and households head's education; (ii) *village-level controls*: distance to large and small markets, main source of livelihood (agriculture, livestock, or casual labor), availability of government provided electricity, and participation in a concurrent WASH intervention as yes or no indicators.

3.4. Challenges

The implementation of the LEGACY program was largely successful, but we also faced the following challenges:

Changes in cash amount: The monthly cash disbursement amount was increased while the program was ongoing and after cash transfer rollout had already begun. The amount increased from 10,000 MMK to 15,000 MMK in October 2017, affecting the study design as the intervention should ideally remain the same throughout the study.[7]

Late recruitment of participants: 40 villages in the study (20 in *Cash+SBCC* and 20 in the *Cash-Only* intervention) were added to the program intervention in April 2016. SCI added 38 of these villages to the study during their program expansion in May 2017 (18 villages from *Cash+SBCC* and 20 villages from *Cash-Only*), which were thus subject to shorter exposure to the program, which we anticipate will lead to weaker program benefits in this subgroup. Further, two villages from the *Cash+SBCC* arm never received any intervention (neither *Cash-Only* nor *Cash+SBCC*) during the entire project rollout.

[6] We use an Ordinary Least Square (OLS) regression model with cluster-triplet fixed effects and standard errors clustered at the village level. We use the following empirical model: $Y=\alpha+\beta Cash+SBCC+\gamma[\text{Cash-Only}]+\delta X+t+\epsilon$

[7] The transfer value was revised upwards to align with the government-led MCCT.

SBCC protocol consistency issues: SBCC interventions were not consistently implemented across all villages. The types of activities changed over time, becoming more comprehensive and targeting key behaviors from May 2016 (Module 1 – *mother-to-mother support groups* and *rethinking sessions*) to January 2017 (Module 2 – education sessions, three targeted groups) and to March 2018 (additional activities).

To address the challenges listed above, we estimate the "Intention-to-Treat" (ITT) effects of the LEGACY program, which means measuring the average effects of being assigned to either *Cash+SBCC* (Treatment 1) or *Cash-Only* (Treatment 2) intervention arms, compared with being assigned to the *Control* group. The analysis implicitly considers all these challenges by estimating the average effects of being assigned to an intervention. However, these challenges might have affected the results by underestimating the size of the impacts.

Contamination issues: Two sets of villages in the *Cash-Only* treatment arm were fully or partially exposed to the SBCC treatment prior to endline data collection.

To address these contamination issues, we re-ran the analysis excluding those mothers assigned to the *Cash-Only* intervention that were exposed to SBCC activities for any length of time (6.3 percent of the sample). We find that, even when addressing program implementation issues by excluding contaminated beneficiaries, results are unchanged from the observed findings on the entire study sample.

A final issue was that, at endline, more eligible women were found in treatment arms compared to the control group (unsurprisingly given their greater incentive to reveal themselves for program benefits and consequently to be captured in program administrative data which facilitated tracking in these areas).[8] As a last robustness check, we also re-ran the analysis restricting our evaluation of program impacts to the sub-set of women who were enrolled at the onset of the study (listing 2016).

[8] Since survey data indicate little residential mobility (6.8% of women in the analysis sample reported having been away for more than 30 days in the past year), we believe that the discrepancy is due to enumerators more easily finding eligible women in treatment communities, rather than eligible women moving into treatment villages. Regardless of the reason, including newly discovered eligible women at differential rates across treatment arms could bias our estimates of program effects, so we exclude them from the analysis in this robustness check.

4. Results

4.1. Anthropometrics – Children

Anthropometric measures offer objective and direct measures of well-being and were collected for all children ages 0-5 years living in the household of each survey respondent at the time of the endline survey (for both pregnant and childbearing women samples). Table 4 lists the anthropometric indicators that were measured. This report focuses on the standard nutrition measures of stunting, wasting, and underweight for children 6-29 months old. This age range allows us to examine nutrition outcomes for two relevant groups of children: one that received the full duration of the program (age range 24-29 months), and one that has received partial duration of the program (age range 6–23 months). We follow the World Health Organization guidelines for constructing anthropometric outcome variables (Leroy, 2011).

Table 4: Children Anthropometric Indicators

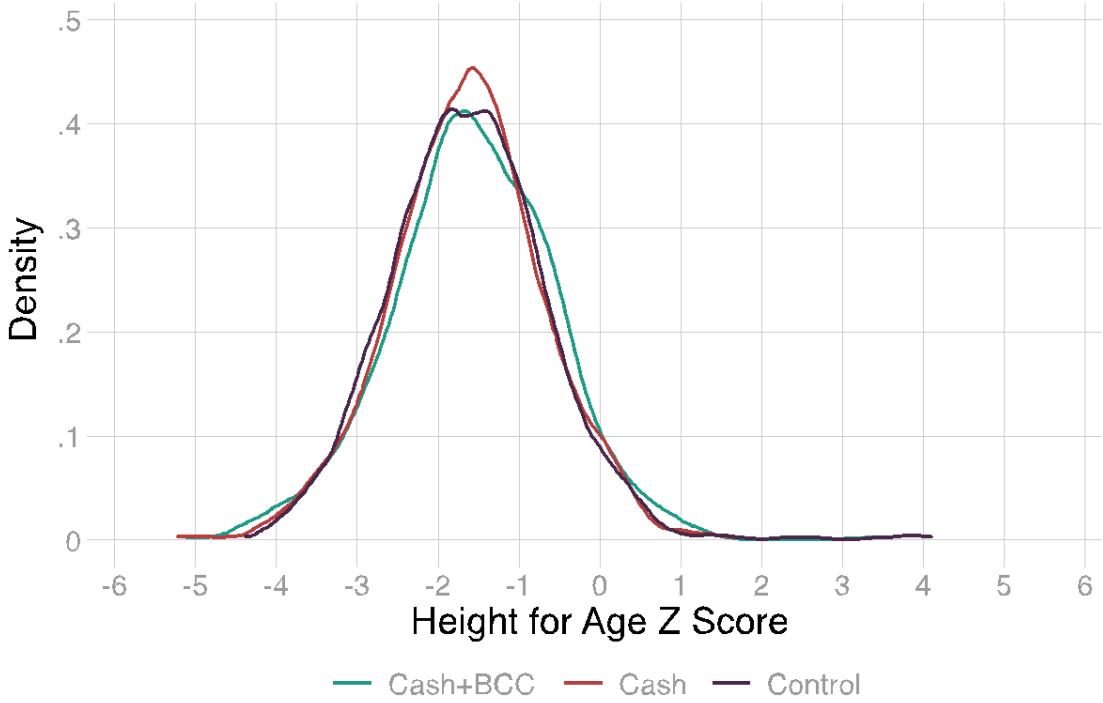
Indicator	Index	Cut-points	Definition
Wasting	Weight-for-height z-score (WHZ)	WHZ < -2	Global Acute Malnutrition (GAM)
		-3 ≤ WHZ < -2	Moderate acute malnutrition
		WHZ < -3	Severe acute malnutrition
	MUAC	MUAC < 12.5 cm	Acute malnutrition
		11.5 cm ≤ MUAC < 12.5 cm	Moderate acute malnutrition
		MUAC < 11.5 cm	Severe acute malnutrition
Stunting	Height-for-age z-score (HAZ)	HAZ < -2	Stunting
		-3 ≤ HAZ < -2	Moderate Stunting
		HAZ < -3	Severe Stunting

Underweight	Weight-for-age z-score (WAZ)	WAZ < -2	Underweight
		-3 ≤ WAZ < -2	Moderate Underweight
		WAZ < -3	Severe Underweight
Maternal undernutrition	MUAC	MUAC < 21.0 cm	Maternal undernutrition

4.1.1. Stunting

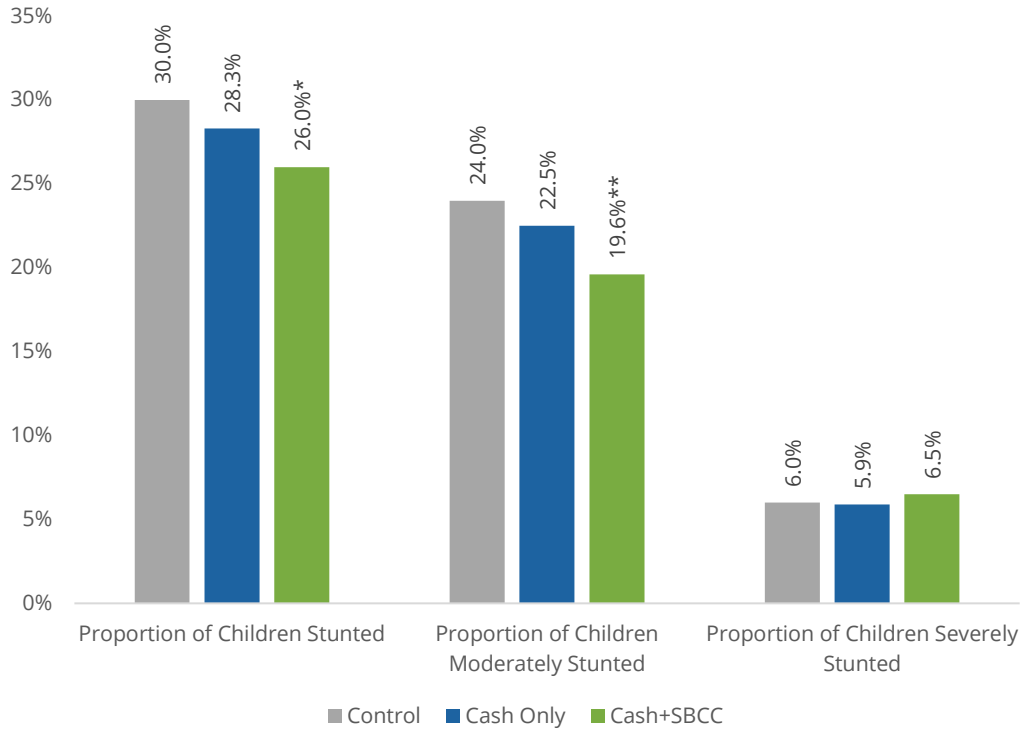
Figure 4 shows the distribution of the height for age z-score (HAZ) for children covered by the program for the majority of the first 1,000 days of their lives, displaying a statistically significant rightward shift in the distribution of *Cash+SBCC* beneficiaries compared to *Cash-Only* ($p<0.05$), and an almost statistically significant shift compared to *Control (p=0.105)*, suggesting that more children in the *Cash+SBCC* arm have higher HAZ.

Figure 4: HAZ Distribution by Study Arm – Children 24-29 Months Old



Two years after program launch, the *Cash+SBCC* group led to a 4 percentage point statistical significant reduction ($p < 0.1$) in the proportion of stunted children from 30% to 26% compared to children living in households in the *Control* group (Figure 5). We also observe a 4.4 percentage point significant reduction from 24% to 19.6% ($p < 0.05$) in the proportion of moderately stunted children, but no statistically significant effects on the proportion of children severely stunted. Children in households in the *Cash-Only* group did not experience a significant positive change compared to the *Control* group as the *Cash+SBCC* group did (Figure 5).

Figure 5: Proportion of Children Stunted (6-29 Months Old)



Statistical significance:[9]

**** statistically significant at 1%, ** statistically significant at 5%, * statistically significant at 10%*

It is important to note that the program affected the proportion of children moderately but not severely stunted. Though our study was set-up to test the hypotheses of whether *Cash+SBCC* and *Cash-Only* affected the proportion of children (severely or moderately) stunted, it was not designed to explore what factors are associated with severe or moderate stunting. However, secondary analysis was done

[9] All subsequent graphs use the same labels to denote statistical significance.

to explore what factors--associated with severe vs moderate stunting—could help explaining why the impact of *Cash+SBCC* was only on moderate and not severe stunting.

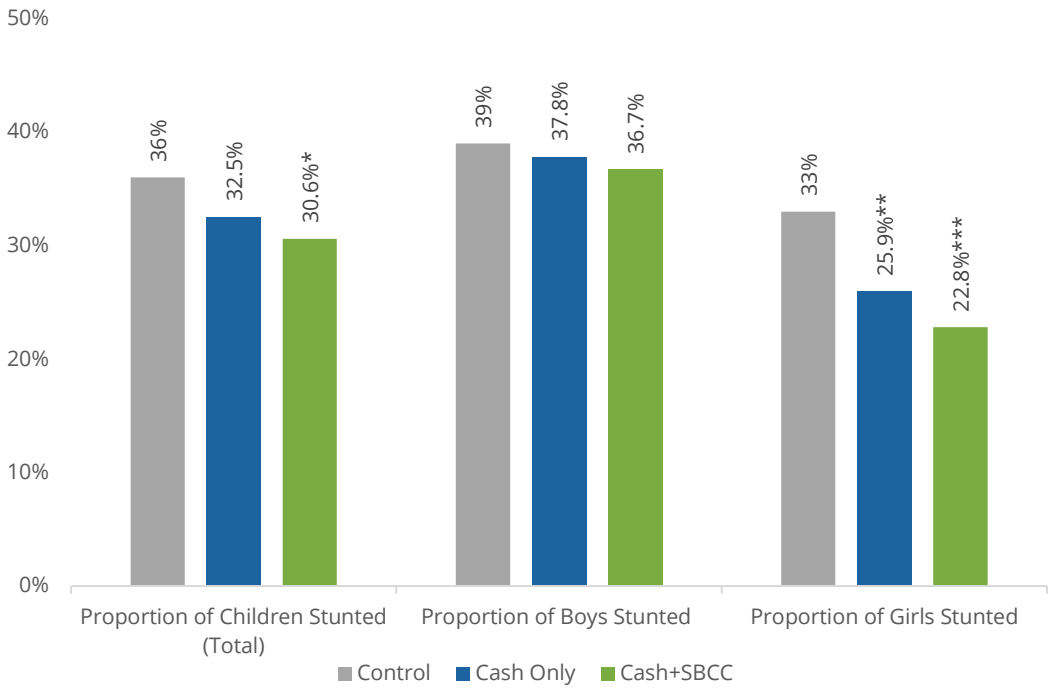
Among the households in *Cash+SBCC*, analysis of child, maternal, and household characteristics (child age, sex, maternal age, maternal education, household size, total number durable assets, improved water source, improved wall material as proxies for household socio-economic status) found no significant difference between moderate and severe stunting with the exception of maternal education level: mothers of moderately stunted children have a higher number of years of education (5.5) compared to the years of education (4.8) of mothers with severely stunted children ($p < 0.05$). The relationship between maternal education and child growth is a well-established one and is consistently seen across countries—as women become more educated children are healthier and grow better (Smith and Haddad, 2015). Additionally, we looked at IYCF practices between severe and moderate stunting cases and found no difference in whether the child was ever breastfed, whether the child received colostrum, received breastfeeding at one year, received timely complementary feeding, child dietary diversity score, minimum dietary diversity score, meal frequency, acceptable diet, and iron consumption, with the exception of whether the child was breastfed within one hour from birth. We find that mothers of moderately stunted children were more likely to have breastfed the child within one hour (95.5%) compared to mothers of severely stunted children (91.5%) ($p < 0.1$). Finally, when we looked at SBCC activity participation rates, we did not see any difference between severely and moderately stunted children.

With our current data, we cannot fully explain why we did not see improvements in severe stunting but did see improvements in moderate stunting, as it does not appear to be related to socioeconomic indicators, household size, exposure to SBCC, or uptake of IYCF behaviors. Another key driver of poor linear growth is disease and exposure to repeated infection. While we collected recent morbidity data in the survey, this generally does not correlate well with linear growth as morbidity has a lagged effect on growth. It may therefore be that illness/chronic infection may be a key driver of severe stunting in this population that was not directly addressed by the interventions. Further research in the Myanmar context is needed to understand the drivers of severe stunting and the barriers to change.

Consistent with our hypothesis that children aged 24 to 29 months should benefit more from the program, we observe larger reductions in the proportion of stunted children within this age group than among children who received the cash transfer for a shorter period (Figure 6). In the *Cash+SBCC* intervention arm, we observe a

significant 5.4 percentage point reduction from 36% to 30.6% ($p < 0.1$) in the proportion of stunted children aged 24-29 months. We also observe an approximate 10 percentage point reduction among girls in the *Cash+SBCC* group compared to the *Control* group, dropping from 33% to 22.8% ($p < 0.01$). These effects appear to be absent among boys, which is in line with the findings from the systematic review in Manley et al. (2013). However, despite finding differences in the effects of the program by gender of the child, the estimates are *not* robust to more rigorous empirical specifications.[10] We cannot conclude there is clear evidence for gender-different impacts of the program. Further research should be set-up to test whether gender differences exist in response to this type of interventions. Although smaller, we finally find a 7-percentage point reduction from 33% to 25.9% ($p < 0.05$) also in the *Cash-Only* arm compared to the *Control.*

Figure 6: Proportion of Children Stunted who Received Program the Longest (24-29 Months Old)

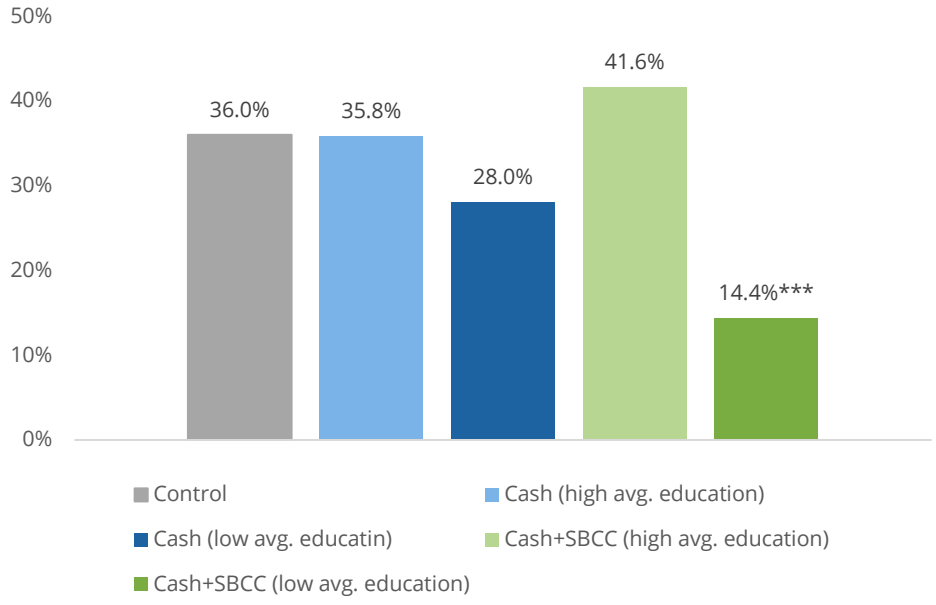


[10] We also restrict our analysis to part of the original sample listed in 2016 to limit further any selection bias of mothers enrolled in the program across treatment arms (the number of pregnant mothers was higher in treatment than in the control group). We find a 11.6 percentage point reduction in the proportion of male children stunted and a 10 percentage point reduction in the proportion of female children stunted for those in *Cash+SBCC* intervention. Both estimates (for male and female children) are statistically significant at 1 percent level ($p < 0.01$).

We also observe heterogeneous effects of the program across socioeconomic status (SES), based on data from the 2016 census survey conducted prior to the start of the program. In this analysis, we used the average level of education of women in the village (Figure 7) as a proxy of poverty level.[11] We also used alternative measures, such as access to improved water, and the results are consistent. Since the program can have broader impacts on socio-economic status of households at endline, we cannot rely on data collected at endline (e.g. assets, house materials, etc.) to explore heterogeneous effects. It is key to rely on data collected before the program started (i.e. census 2016) to explore these impacts.

The proportion of stunted children in the *Cash+SBCC* intervention arm appears significantly lower in areas of lower average education compared to the *Control* group, with a 21.6% percentage point reduction from 36% in the *Control* to 14.4% ($p < 0.01$) in the *Cash+SBCC* (low average education) arm. Further, the proportion of stunted children receiving the *Cash+SBCC* intervention was 27.2 percentage points lower in areas of low education versus high education (14.4% vs. 41.6%, respectively) ($p < 0.01$). Our findings indicate that the complementary services and information provided in the *Cash+SBCC* arm are particularly effective in maximizing the impacts on child nutrition among especially vulnerable populations and with an exposure of at least two years to the program.

Figure 7: Proportion of Children Stunted (24-29 Months Old) by Level of Women's Education in Villages

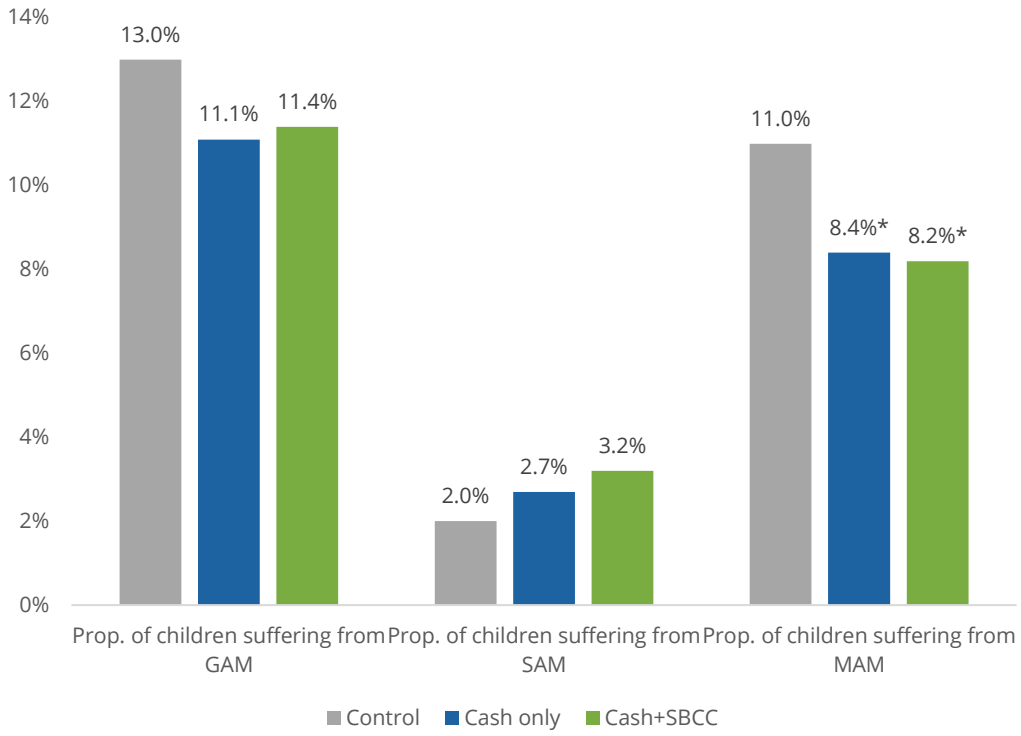


[11] Average level of education is defined as the village-level average number of years of education attained by resident women. We set the cut-off point at the median.

4.1.2. Wasting

We do not observe any significant program effects on measures of wasting (Global Acute Malnutrition, GAM, and Severe Acute Malnutrition, SAM), but we do find impact on the proportion of children suffering from Moderate Acute Malnutrition (MAM) (Figure 8). In fact, we find a reduction of 2.8 percentage points ($p < 0.1$) from 11% to 8.2% in the proportion of children suffering from MAM in the *Cash+SBCC* arm. Similarly, we observe a 2.6 percentage point reduction, from 11% to 8.4% ($p < 0.1$) among children in the *Cash-Only* arm. This suggests that cash transfers could help reduce wasting.

Figure 8: Proportion of Children Wasted (6-29 Months Old)



4.1.3. Underweight

After running analysis on underweight measures among the treatment groups versus the *Control* group, we do not observe any significant program effects.

> **Overall, the Cash+SBCC intervention led to a reduction in the proportion of moderately stunted children. The intervention is particularly effective among vulnerable populations (low socio-economic status) and on children who were exposed for at least two years to the program, regardless of their gender. In contrast, the Cash-Only intervention did not seem to have an impact on the proportion of stunted children. We do, however, find that cash transfers could help reduce moderate wasting.**

4.2. Anthropometrics – Mothers

We explore effects on measures of mothers' nutrition statistics (Table 5), including the proportion of pregnant mothers and pregnant and lactating women (PLW) undernourished by MUAC. We do not find any statistically significant impacts of the program on any mother anthropometric measures (neither *Cash+SBCC* nor *Cash-Only*).

Table 5: Mother Anthropometric Indicators

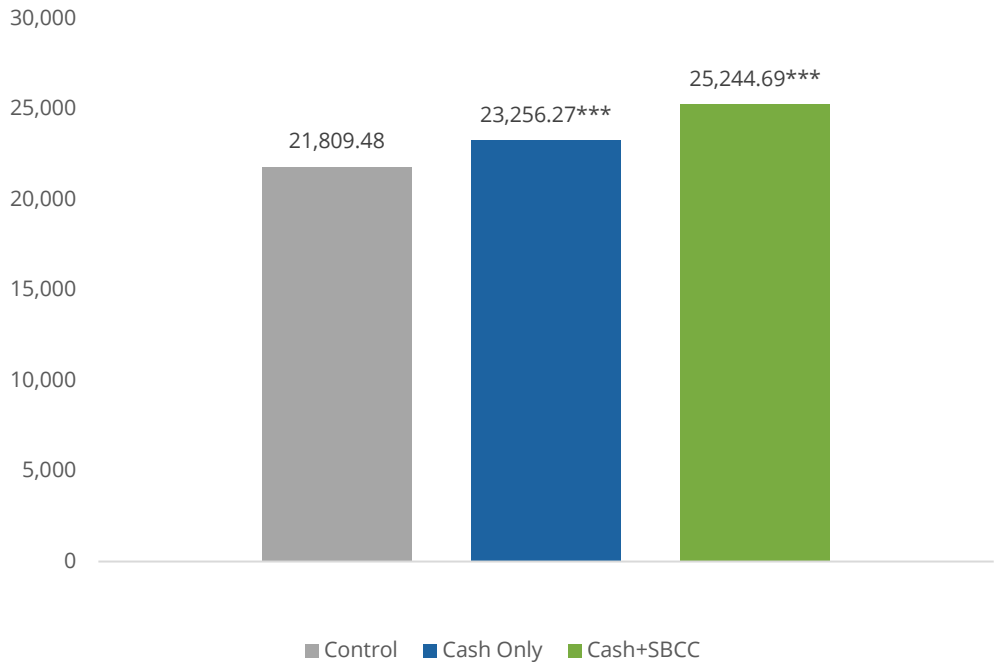
Indicator	Index	Cut-points	Definition
Maternal undernutrition	MUAC	MUAC < 21.0 cm	Maternal undernutrition

4.3. Consumption and Expenditures

To gauge program impact on recipients' nutrition, we also look at household consumption (in MMK) through self-reported measures across a number of categories, including food (seven-day recall), and schooling, adult/child health, and other expenses (12-month recall). We find that women assigned to the *Cash+SBCC* intervention spend significantly more money on food relative to the *Control* group, with an increase of 3,435.21 MMK (2.28 USD) from 21,809.48 MMK to 25,244.69 MMK (Figure 9) ($p < 0.01$). Women assigned to the *Cash-Only* intervention

exhibit a similar positive change, though the increase in spending is less stark (Figure 9).

Figure 9: Expenditures on Food Consumption (MKK) in the Last 7 Days



We do not find other statistically significant increases in other expenses (beverages, other household items, fees and tuition, school materials and uniforms, adult/child health, transportation, remittances, house construction, commerce and farming, celebration, debt, donation, and regular expenses) with the exception of a statistically significant increase ($p < 0.1$) for expenses on livestock breeding, but only for the *Cash+SBCC* intervention. Specifically, we find an increase of 8,897 MMK (12 months) in *Cash+SBCC* compared to the average expenses of 28,645MMK in the *Control* arm.

> **Both *Cash+SBCC* and *Cash-Only* interventions increased expenditures on food consumption; however, households in the *Cash+SBCC* group increased expenditures on food consumption to a greater extent. We did not find any major changes in other expenditures, except for an increase in expenses on livestock breeding only for the *Cash+SBCC* intervention.**

4.4. Health Care Seeking

We do not observe particularly strong program effects across various measures of general health and illness treatment in children. Our indicators look at illnesses occurring in the past two weeks and are based on self-reported incidence. When mothers are assigned to the *Cash-Only* arm, we observe a 3.2 percentage point reduction ($p < 0.1$) in the proportion of children experiencing any illness or disease (from 97% in the *Control* group to 93.8%), and a 5.1 percentage point reduction ($p < 0.1$) in the proportion of children experiencing fever (from 73% in the *Control* group to 67.9%). We do not find statistically significant results for the *Cash+SBCC* arm.

We also look at response time to child illnesses to determine whether ill children receive healthcare within an appropriate time period (one day or less). In the *Cash-Only* treatment arm, we observe a 7-percentage point reduction ($p < 0.1$) in the proportion of promptly treated children suffering from pneumonia (from 91% in the *Control* group to 84%), while we do not observe any significant effects on prompt treatment for fever. However, these results disappear after excluding a sub-group of study-participants from the analysis to address contamination issues (See Section 3.4 for details). Overall, we do not observe any significant effects driven by the *Cash+SBCC* intervention on this set of general health indicators, which highlights the fact that SBCC activities focused more on nutrition and hygiene practices.

Health seeking behavior before, during, and after pregnancy was an important dimension of the SBCC sessions. As such, we should expect program effects across various dimensions of mother and child health behavior. With regards to visits with skilled health professionals (Figure 10), we find a statistically significant increase in the total number of ANC visits with skilled health personnel from 5 in the *Control* group to 5.33 in the *Cash+SBCC* group ($p < 0.01$) and to 5.25 visits ($p < 0.1$) among those in the *Cash-Only* group. We also find that the proportion of mothers attending at least four antenatal care visits (Figure 11) had a statistically significant increase of 13.9 percentage points from 69% to 82.9% ($p < 0.01$) for households in the *Cash+SBCC* group compared to the *Control* group and a 9.1 percentage point increase to 78.1% ($p < 0.01$) for the *Cash-Only* group.

Figure 10: Number of Antenatal Care (ANC) Visits with Skilled Personnel

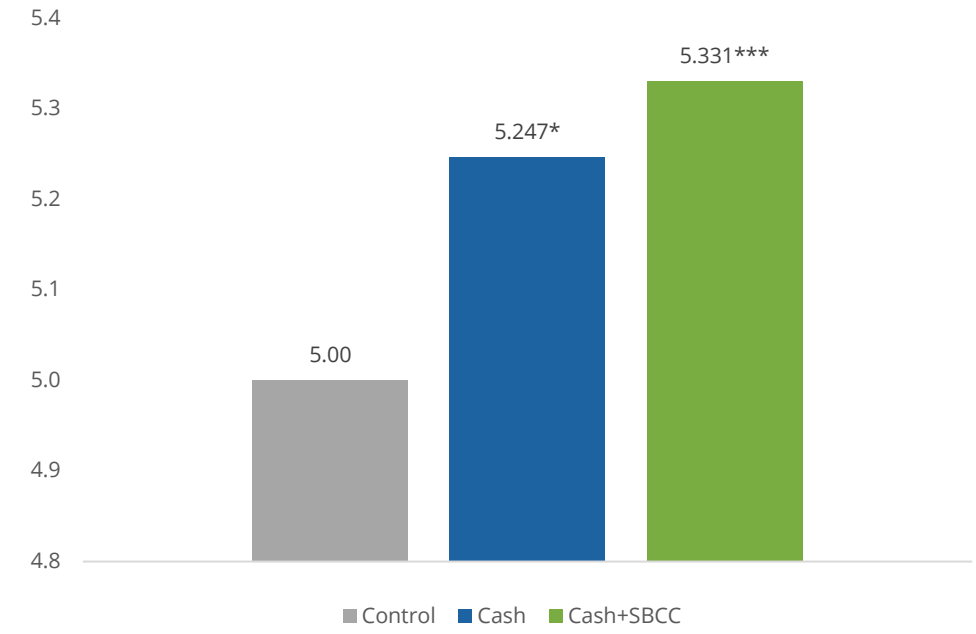
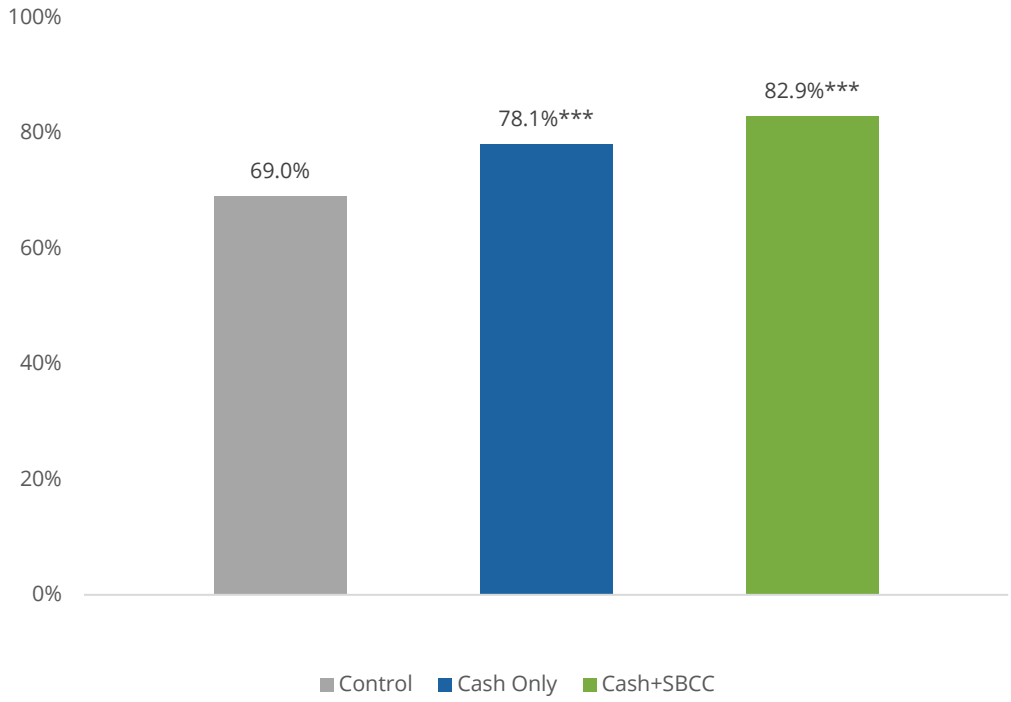


Figure 11: Proportion of Mothers with at Least Four ANC Visits to Skilled Personnel



Finally, we also explore Postnatal Care (PNC) and delivery behavior, but we do not find any statistically significant effects of the program on mothers' behavior.

Figures 12 and 13 shows results on iron supplementation. We find that both the *Cash+SBCC* and the *Cash-Only* interventions significantly improve iron intake during the prenatal period. In particular, we observe a significant increase in the proportion of mothers taking iron tablets during pregnancy with a 2.2 percentage point increase ($p < 0.01$) in the *Cash+SBCC* arm from 96% to 98.2% and a 2.3 percentage point increase ($p < 0.01$) in the *Cash-Only* arm up to 98.3% (Figure 12). Moreover, when looking at the number of iron tablets consumed during pregnancy, we observe a statistically significant increase of 9.6 more tablets consumed ($p < 0.05$) in the *Cash+SBCC* group and a significantly stronger effect of 10.6 tablets ($p < 0.01$) among women in the *Cash-Only* group.

Figure 12: Proportion of Mothers Taking Iron Tablets

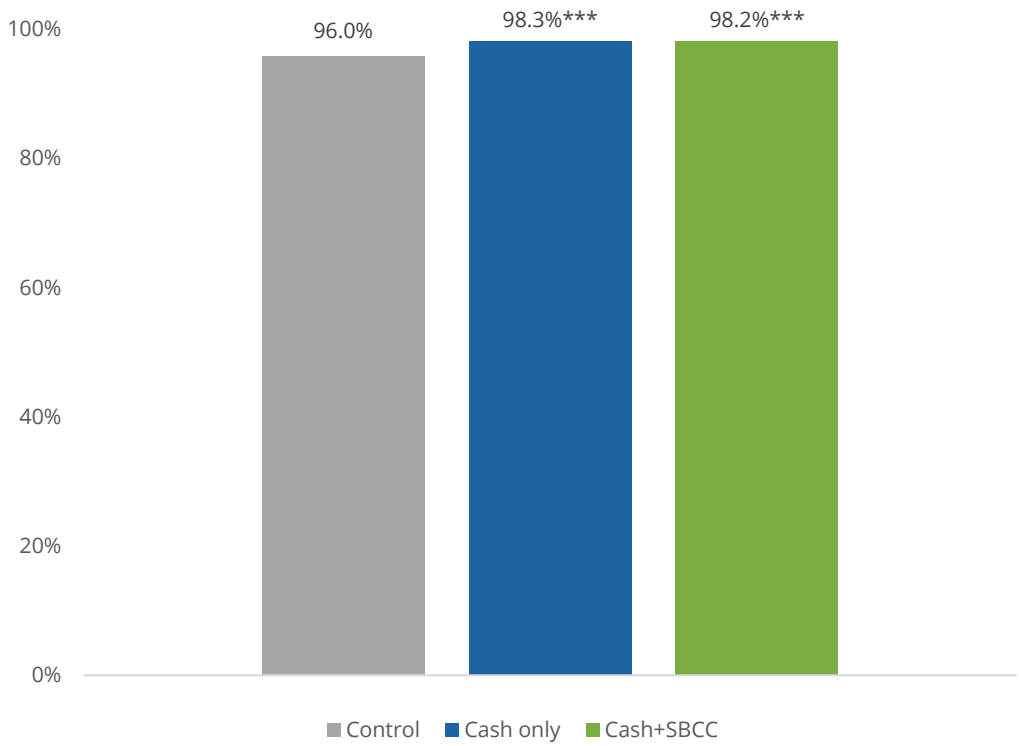
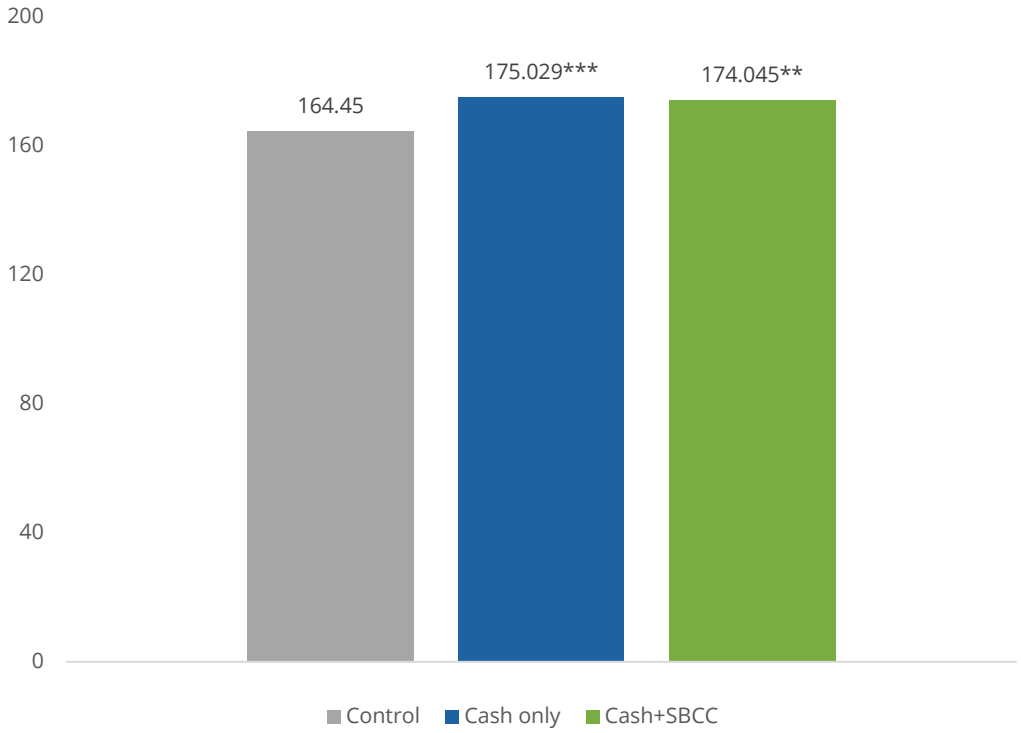


Figure 13: Number of Iron Tablets Consumed



Overall, we do not find major effects on children's health and illness. We find that both *Cash+SBCC* and *Cash-Only* interventions led to an increase in usage of Antenatal Care, but no changes were found in Postnatal Care and delivery-related mothers' behavior. In addition, women in both the *Cash+SBCC* and *Cash-Only* group improved in iron intake during the prenatal period.

4.5. Food Security, IYFC Awareness and Practices

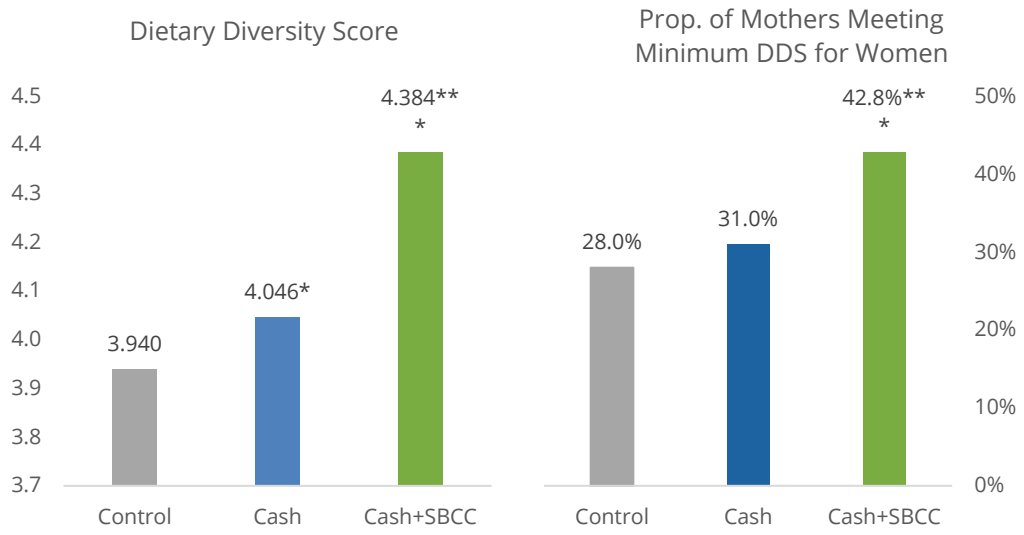
4.5.1. Mother Dietary Diversity and Knowledge on Breastfeeding

Minimum Dietary Diversity for Women (MDD-W) is measured as the number of food groups consumed by the mothers the previous day, out of ten food groups defined by the FAO and FHI 360:[12] (1) grains, white roots and tubers, and plantains; (2) Pulses (beans, peas, and lentils); (3) Nuts and seeds; (4) dairy; (5) meat, poultry, and fish; (6) eggs; (7) dark green leafy vegetables; (8) other vitamin A-rich fruits and vegetables; (9) other vegetables; and (10) other fruits. A MDD-W of five is considered the

[12] FAO and FHI 360. 2016. Minimum Dietary Diversity for Women: A Guide for Measurement. Rome: FAO.

minimum. First, a 0.444 unit (food group), statistically significant, increase ($p < 0.01$) in dietary diversity score is observed for women assigned to the *Cash+SBCC* intervention, moving from a score of 3.940 to 4.384, and a 0.106 unit increase to a score of 4.046 ($p < 0.1$) in the *Cash-Only* group relative to the *Control* group (Figure 14). Moreover, mothers in *Cash+SBCC* are also 14.8 percentage points more likely to meet the minimum dietary diversity score threshold relative to the *Control* group (from 28% to 42.8%, $p < 0.01$), suggesting that the combination of cash and SBCC interventions can have a positive impact on women's nutrition choices.

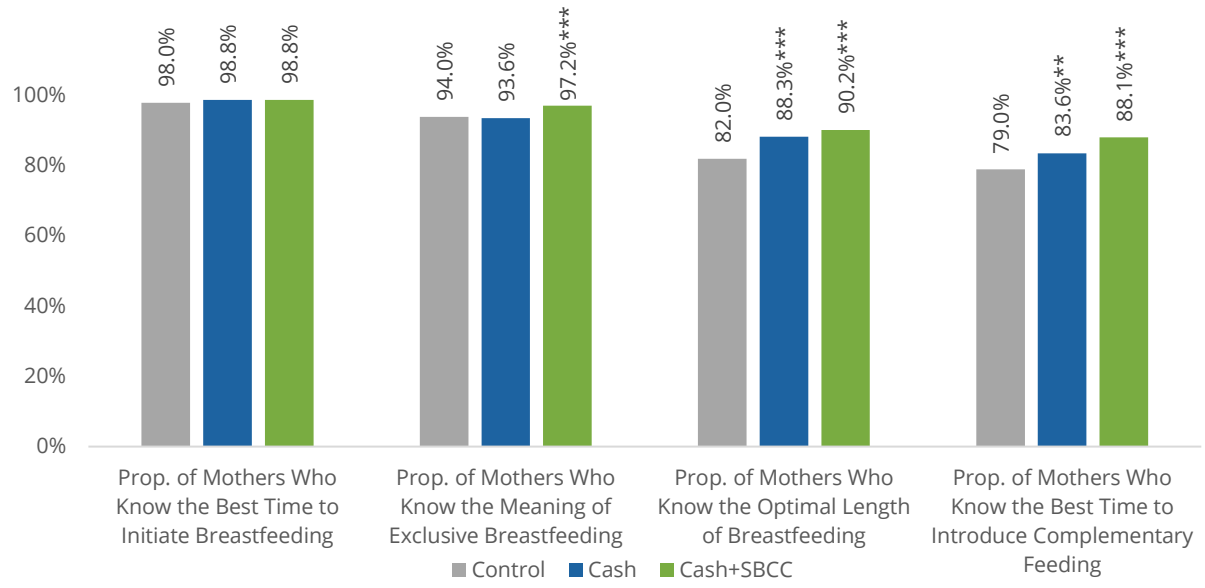
Figure 14: Women's Dietary Diversity



We also find that women in the *Cash+SBCC* group are more likely to know the meaning of exclusive breastfeeding, the optimal length of breastfeeding, and the optimal time to introduce complementary feeding (Figure 15). We observe a statistically significant increase of 3.2 percentage points ($p < 0.01$) in the proportion of mothers that know the meaning of exclusive breastfeeding between the *Cash+SBCC* arm and the *Control* group, from 94% to 97.2%. With regards to the proportion of mothers who know the optimal length of breastfeeding, we note a significant increase of 8.2 percentage points ($p < 0.01$) among women in the *Cash+SBCC* group as well as a significant 6.3 percentage point increase ($p < 0.01$) in the *Cash-Only* group compared to the *Control* group, moving from 82% to 90.2% and 88.3% in each of the treatment arms, respectively. We also observe significant effects in the proportion of mothers who know the best time to introduce complementary feeding with a stronger increase in the *Cash+SBCC* group, which is 9.1 percentage points ($p < 0.01$) higher than the *Control* group, changing from 79% to 88.1%. The

Cash-Only group also experienced an important increase of 4.6 percentage points ($p < 0.05$), reaching 83.6% of women. We do not observe statistically significant changes among the different experimental groups in the knowledge of mothers on the best time to initiate breastfeeding, which can be explained by the already high existing knowledge on this particular subject among our sample, with 98% of women in the *Control* group and 98.8% in both treatment arms.

Figure 15: Women's Knowledge on Breastfeeding

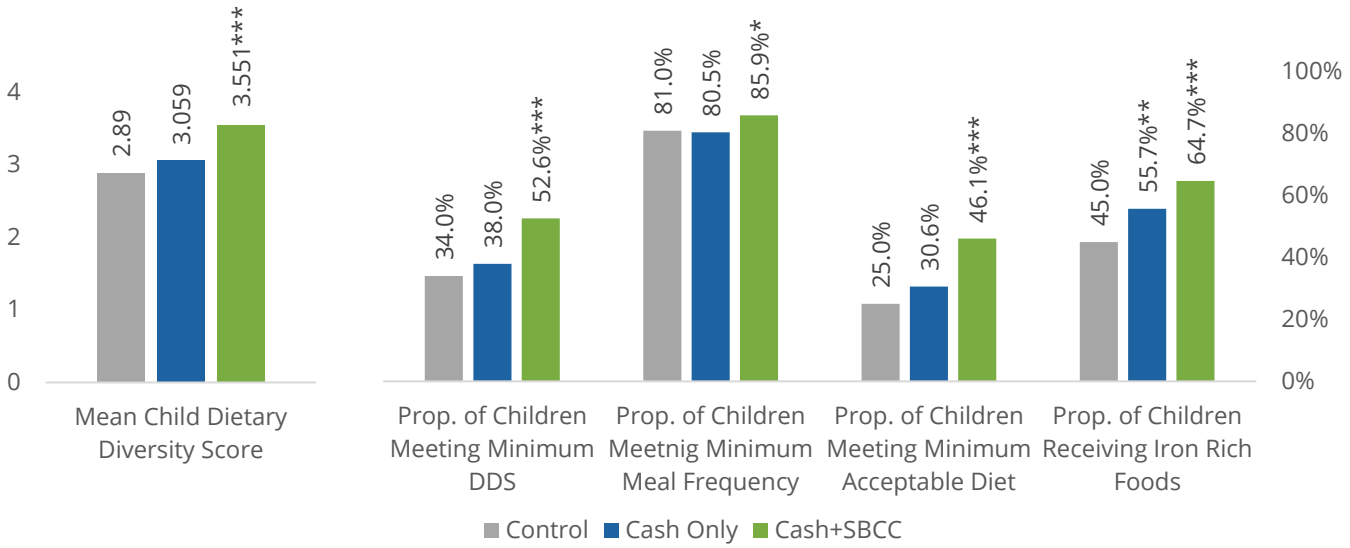


It is interesting that we observe significant effects in the *Cash-Only* intervention arm on the proportion of mothers who know the ideal length of breastfeeding and the optimal time to introduce complementary feeding, despite these women not having received additional training or information on these topics (according to SCI's administrative data on implementation rollout). We argue that the monitoring activities conducted by SCI, which included correcting wrong mothers' behavior, might be one factor contributing to why we find an increase in knowledge on breastfeeding practices also in *Cash-Only* intervention. Alternatively, it is possible that there were information spillovers from *Cash+SBCC* villages to *Cash-Only* ones.

4.5.2. Child Dietary Diversity and Intake

As far as child DDS[13] and intake are concerned, we see positive, statistically significant effects on all indicators we collected data on at endline, mainly driven by the *Cash+SBCC* intervention (Figure 16).

Figure 16: Child's Dietary Diversity Score & Intake (6-23 Months)



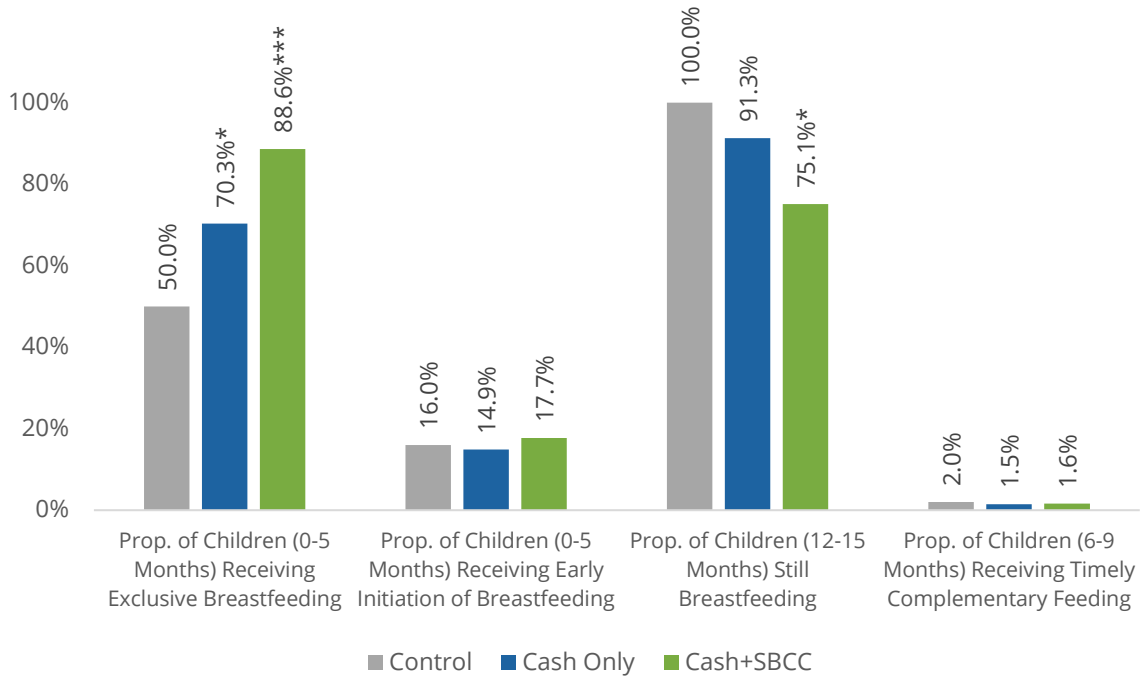
In particular, the results show a significant increase of 0.661 ($p < 0.01$) in children's dietary diversity score, from 2.89 in the Control group to 3.55 in the *Cash+SBCC* arm. Moreover, the proportion of children meeting the minimum DDS by 18.6 percentage points ($p < 0.01$), from 34% to 52.6%, and the fraction of children receiving a minimum acceptable diet increases by 21.1 percentage points ($p < 0.01$) in the *Cash+SBCC* intervention arm relative to the *Control* group, from 25% to 46.1%. We do not observe statistically significant effects in the *Cash-Only* arm relative to the *Control* group, with the only exception being iron-rich foods intake, where the proportion of children in this group's intake is 10.7 percentage points ($p < 0.05$) higher than in the *Control* group, from 45% to 55.7%. Further, the proportion of children in the *Cash+SBCC* group is 19.7 percentage points ($p < 0.01$) higher than the *Control* group, reaching 64.7% of children. Hence, intensive SBCC seems to play an important role in affecting behavioral change and ultimately improving child nutrition.

[13] Child DDS is measured as the number of food groups consumed out of seven food groups. A MDD of four is considered the minimum.

4.5.3. Care of Children

Knowledge and adoption of infant and young child feeding practices (IYCF) is also an important set of outcomes for measuring program effectiveness, especially given that the SBCC sessions had a strong focus on exclusive breastfeeding and complementary feeding topics (Figure 17).

Figure 17: Infant and Young Child Feeding Practices



We find that children between 0 and 5 months old whose mothers were part of the *Cash+SBCC* intervention group were more likely to receive exclusive breastfeeding. Here we observe a 38.6 percentage point increase relative to the *Control* group ($p < 0.01$), which goes from 50% to 88.6%. In the *Cash-Only* arm, we observe a similar, though less extreme, increase of 20.3 percentage points relative to the *Control* group ($p < 0.1$). This difference is very big in magnitude, but consider that the sample size is very small in this category of children (0-5 months). Relative to the *Control* group, we do not find any significant effects on the proportion of children between 0 and 23 months old receiving timely initiation of breastfeeding, nor on the proportion of children between 6 and 9 months old receiving timely complementary feeding. Finally, in the *SBCC+Cash* intervention arm, we observe a significant reduction of 24.9 percentage points in the proportion of 12 to 15-month-old children still being breastfed ($p < 0.1$), from 100% in the *Control* group to 75.1%. This is surprising and counter to what we expect, as SBCC sessions focused on optimal breastfeeding and

complementary feeding practices, stressing that breast milk continues to supply slightly less than half the energy needs (40 percent) for a child of 12 to 24 months, and supporting mothers with breastfeeding challenges. Overall, these findings confirm that changes in knowledge (Figure 15) are one of the important drivers of behavioral response (Figure 17).

> **We find that *Cash+SBCC* interventions had a positive impact on both mothers' and children's dietary diversity. We also find that mothers have a higher knowledge on breastfeeding practices (meaning of exclusive breastfeeding, optimal length, and the best time to introduce complementary feeding), and this led to a higher proportion of children (0-5 months old) receiving exclusive breastfeeding.**

4.6. Household Characteristics and WASH practices

4.6.1. Household assets and housing material

We asked respondents about their durable assets (car, fridge, generator, motorcycle, radio, tv, and mobile phones) and about their roof, wall, and floor material. We construct a measure of the total number of durable assets (up to seven) and measures of improved house material, following WHO standards. We find statistically significant impacts of the *Cash+SBCC* intervention, compared to the *Control* group on the number of durable assets (Figure 18) and improved wall material (Figure 19). There is a statistically significant increase from 2.47 assets in the *Control* group to 2.671 total number of durable assets in *Cash+SBCC* (Figure 18, $p < 0.01$). We also find an increase of 4.3 percentage points ($p < 0.05$) in the probability of having an improved wall material in the *Cash+SBCC* arm (from 34% to 38.3%), compared to *Control* group (Figure 19). We find similar statistically significant effects ($p < 0.1$) on the proportion of households with improved wall material for the *Cash-Only* group, but non-statistically significant effects on the total number of durable assets for the same group.

Figure 18: Total Number of Durable Assets per Household

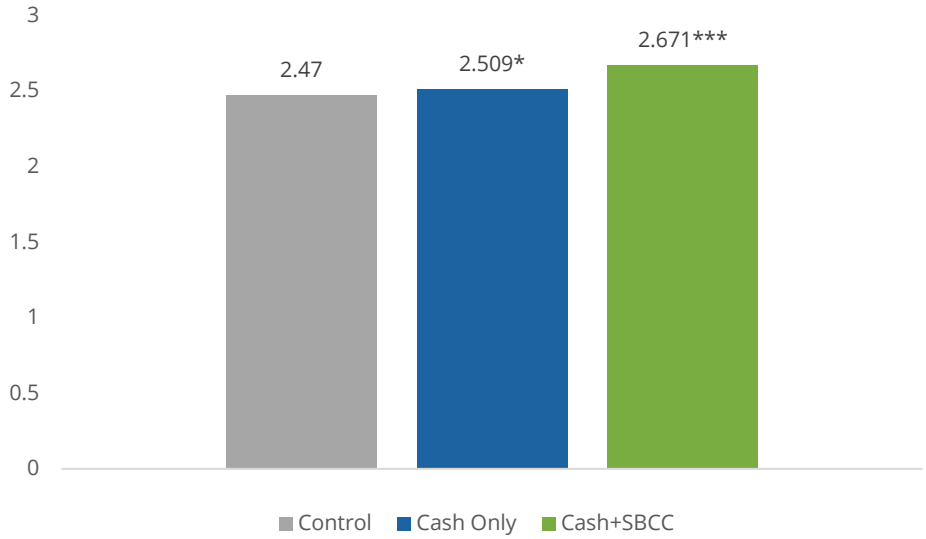
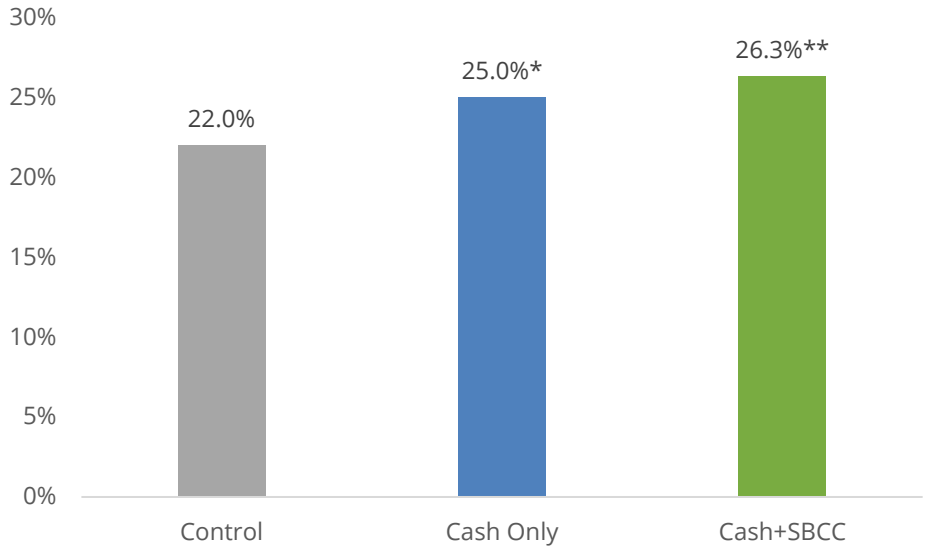


Figure 19: Proportion of Households with Improved Wall Material



The *Cash+SBCC* intervention increased the total number of durable assets and the probability of having improved wall material. Similarly, the *Cash-Only* intervention increased the proportion of households with improved wall material, in line with an income effect generated by cash transfers.

4.6.2. WASH

To assess whether the program had an effect on water, sanitation, and hygiene practices, we measured a number of standard WASH indicators, including water treatment practices, storage methods, and hand washing habits.[14]

We do not find statistically significant impacts of the program on water treatment practices relative to the Control group, such as boiling, filtering, chlorine or iodine treatments. Neither do we observe effects of either *Cash+SBCC* or *Cash-Only* relative to the *Control* group in regards to water storage practices.

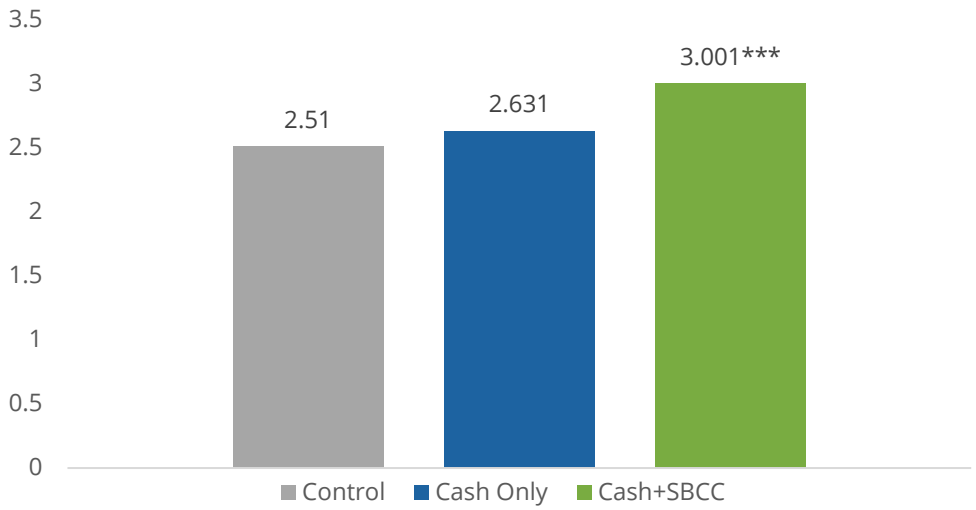
However, we do find program effects on hand washing practices. Hand-washing practices are measured as a cumulative score of adopted practices (such as washing hands with soap after going to the toilet, before preparing food, before eating, before breastfeeding, after cleaning a baby's bottom, after disposing baby feces, before or after handling children, after eating, or on other occasions), where each practice is counted as 1 (up to 9 practices). We find a 0.491 unit significant increase ($p < 0.01$) in the index of hand-washing behavior (Figure 20) among those in the *Cash+SBCC* arm compared to those in the Control group.

Furthermore, we observe a significant and positive changes in handwashing practices in *Cash+SBCC* households. We observe that those in the *Cash+SBCC* group are 1.4 percentage points ($p < 0.01$) more likely to use soap for hand-washing compared to the *Control* group. In terms of means, it increased from 98% in the *Control* group to 99.3% in the *Cash+SBCC* arm. Moreover, *Cash+SBCC* beneficiaries are also more likely to always wash their hands after cleaning a baby's bottom, after using the toilet, before preparing and eating food, before feeding children, after disposing of baby feces, before and after handling children, and on other occasions ($p < 0.01$). We do not observe significant effects in the *Cash-Only* intervention on the majority of hand-washing indicators, aside from a significant increase, relative to the *Control* group, in the proportion of *Cash-Only* participants who always wash hands before feeding children and after disposing of baby feces ($p < 0.1$).

Since a number of SBCC sessions addressed hand washing in detail, we should not be surprised that program effects on hand-washing practices are concentrated in the *Cash+SBCC* intervention arm.

[14] It should be noted that WASH indicators are based on self-reported recollection of behavior in the past 24 hours.

Figure 20: Average Score on Index of Hand-Washing Behavior



4.7. Decision Making on Household Income

This section explores whether the program affected decision making on household income as a whole, not specifically on the allocation of the monthly cash transfer.

In order to measure women's decision-making power within the household, we asked a hypothetical question about whether the mother was willing to hide any amount of money if she received 10,000 MMK. We do not find evidence that that is the case in any of the treatment groups compared to *Control* group.

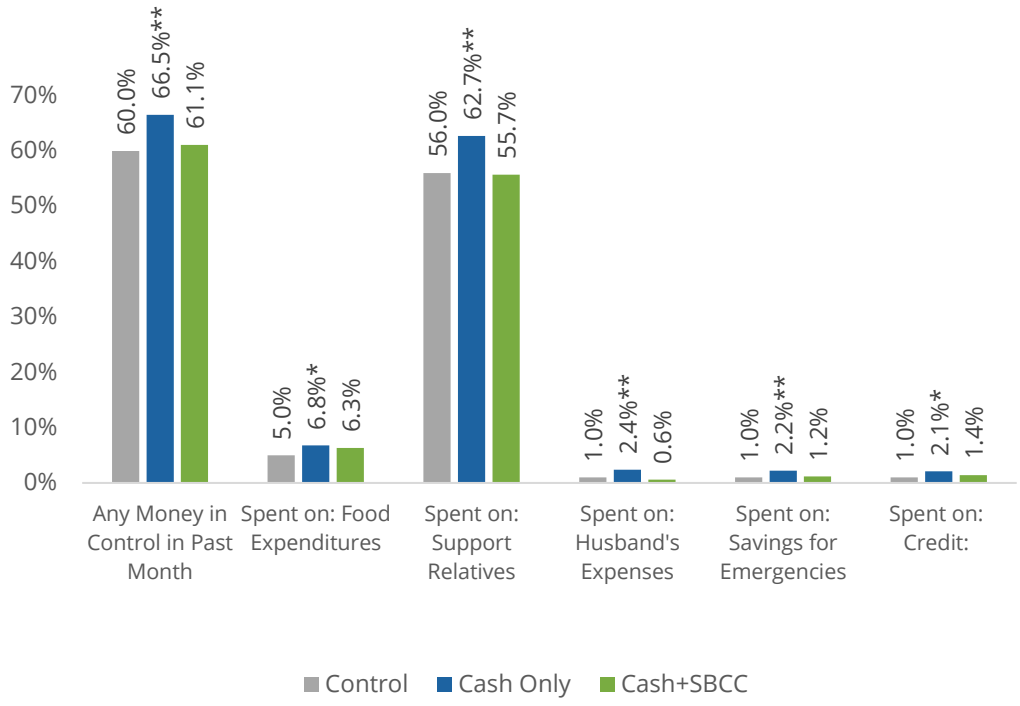
We also asked mothers about how much money the household had in the past month, how much money she had control over in the past month (either solely or jointly with husband), and how much of that money she had control over she spent on different items in the past month. We do find statistically significant evidence that respondents are more likely to report that they had control over some money in the past month in the *Cash-Only* group, compared to the *Control* group. We find a statistically significant increase from 60% to 66.5% ($p < 0.05$) compared to the *Control* group, while we do not observe any statistically significant effects for *Cash+SBCC* arm, suggesting that SBCC did not lead mothers to assume more control over money in the household. The mothers in the *Cash-Only* arm had control over about 9,757 MMK more compared to the *Control* group (49,021 MMK) (Figure 21) in the past month.

Specifically, in the *Cash-Only* arm, mothers reported spending more compared to the *Control* group on food items (1.8 percentage points, $p < 0.1$), supporting relatives (6.7

percentage points, $p < 0.05$), husband's expenses (1.4 percentage points, $p < 0.05$), savings for emergencies (1.2 percentage points, $p < 0.05$), and credit (1.1 percentage points, $p < 0.1$) in the past month. In line with this, we observe an increase in the woman's decision on her own earnings from 36% in the *Control* group to 51.1% ($p < 0.01$) for the *Cash-Only* intervention. We do not find any other changes in intra-household decision making, and no effects for the *Cash+SBCC* group (Figure 21).

A greater focus on shared decision making should be considered in future SBCC approaches.

Figure 21: Proportion of Mothers Deciding on Household Expenses



We find that the *Cash-Only* treatment influences the decision making of the woman in the household, compared to the *Control* group. The addition of SBCC did not seem to support women's decision-making power on household expenditures, suggesting that this topic should be better addressed in future SBCC curriculum.

4.8. Fertility, Desired Fertility, and Family Planning

We test whether the program led to any fertility response that could bias a comparison of outcomes across experimental arms. Relative to the *Control* group, mothers in *Cash+SBCC* and *Cash-Only* do not appear more likely to be currently pregnant and do not have a higher number of pregnancies since the start of the program, suggesting that there are no fertility effects of the program.

We also collected data on desired fertility and family planning. We do not find any statistically significant results on the desire of women or their husbands to have an additional child. There are also no statistically significant effects on the length (in months) the woman or her husband is willing to wait for another child. Finally, we do not find statistically significant effects of the programs on the proportion of mothers using family planning or type of family planning at the time of endline data collection. The lack of effects is not surprising since the amount of cash is small.

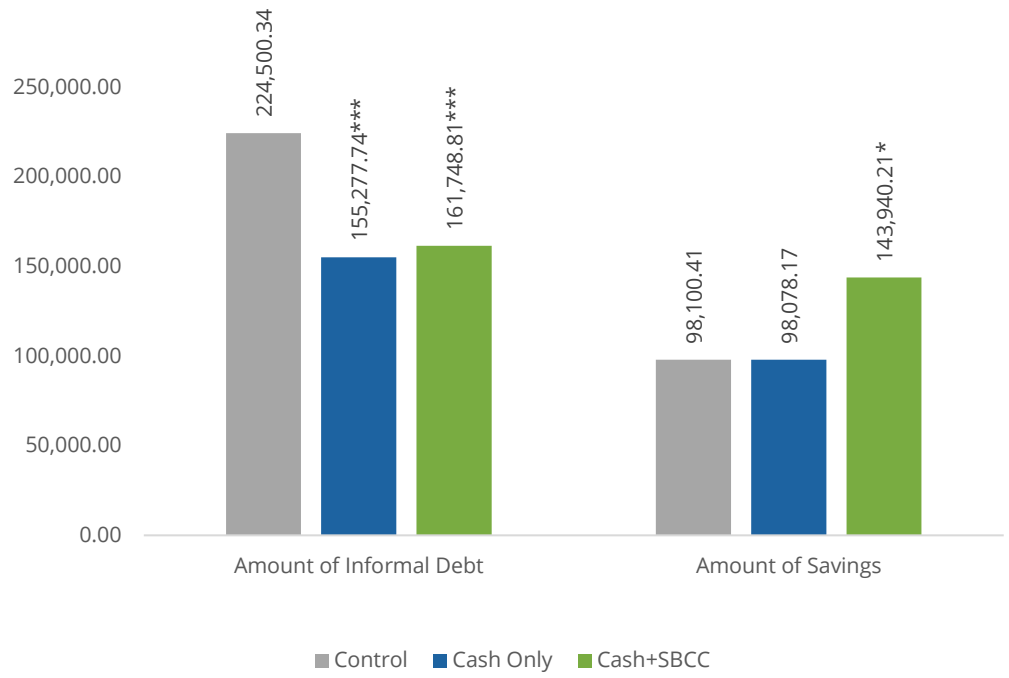
> **Overall, the program did not change fertility, desired fertility, or use of family planning.**

4.9. Access to Credit, Debt, Saving

We asked respondents whether they had outstanding (formal and informal) debt and savings and the amount of any debt and savings.

We do not find statistically significant impacts of the program on the probability of having debt or savings. However, we do find a significant decrease in the amount of current informal debt of 62,751 MMK ($p < 0.01$) and 69,222 MMK ($p < 0.01$) for *Cash+SBCC* and *Cash-Only* respectively. We also observe an increase in savings of 45,840 MMK ($p < 0.1$), but only for *Cash+SBCC*. We do not find statistically significant changes in the amount of formal debt. This is in line with the evidence above that *Cash+SBCC* also leads households to own more durable assets and improve their house conditions (Figure 22).

Figure 22: Amount of Informal Debt and Savings



While the *Cash-Only* intervention led households to decrease the amount of (informal) debt, *Cash+SBCC* also helped them increase their savings.

4.10. Cash Transfer and Usage

In our data, 99.61% of mothers report that they are mostly responsible for making the decision on using the MCCT cash transfer. We do not find statistically significant difference among the two interventions group since overall only 9 beneficiaries reported that either her and someone else (6) or only someone else (3) make decisions on the monthly transfer amount.

We asked respondents (only in treatment arms) about the amount of cash spent on different items for their last monthly cash transfer: food, gifts, livestock business investment, water, medical expenditures, school, debt payment, transport, agricultural inputs, household items, fuel, clothes and shoes, or savings. We calculate the proportion of MMK spent on each item over the total amount of the transfer (10,000 MMK or 15,000 MMK). We find that almost all of the cash transfer is spent on

food (88% for *Cash-Only* and 90.3% for *Cash+SBCC).* Beneficiaries spend about 5-7% on medical expenses and less than 2% on other household items like clothes and shoes. The percentages of spending on other categories is minimal. By comparing the *Cash+SBCC* and *Cash-Only* arm, we do not find big differences in how beneficiaries spend their monthly cash transfer. We only find that beneficiaries in *Cash+SBCC* spend about 2% less ($p < 0.05$) on medical expenses and 0.4% less ($p < 0.1$) on debt payment, compared to beneficiaries in *Cash-Only* arm. We do not find any other statistically significant difference in the spending of the cash transfer on other items.

> **We do not find any major difference between *Cash+SBCC* and *Cash-Only* groups on how households use their monthly cash transfer.**

4.11. LEGACY Program Exposure

Tables 1 and 2 in Annex 1 describes summary statistics on exposure to the program as asked in the endline questionnaire. Specifically, we asked respondents: (i) whether they knew the MCCT logo after showing them the 1,000 Days MCCT logo (Annex 3, Figure 1); (ii) whether they saw any of the LEGACY material before (as shown in Annex 3, Figures 2-8), (iii) what they have learned from these materials; (iii) which LEGACY project activities they have joined or experienced; and (iv) whether they did anything new or different after seeing the material or participating in the activities, and if so, what.

Among respondents that self-reported they are enrolled in the program and assigned to T1 villages, where SBCC was delivered, 98% said that they knew the MCCT logo, and 99% of them reported to have seen the LEGACY material. Of those, 17% learned about getting at least four ANC visits, 21% about eating a four star diet during pregnancy, 25% about eating a four star diet during breastfeeding, 26% about breastfeeding within one hour from birth, 38% about exclusive breastfeeding up to 6 months of age, 49% about feeding a child with four star diet, 39% about feeding the child responsively under care, and 77% about washing hands with soap. Very similar proportions of mothers also self-reported to change their behavior after learning from this material.

As far as activities are concerned, 56% of respondents report joining at least one activity since their enrollment, with 39% reporting joining cooking demonstrations (on average 1.7 times), 12% mother-to-mother support groups (on average 3.22 times), 11% community events (on average 1.5 times), 5% mother support (on

average 3.5 times), and 1% counseling activities (on average 3.3 times). When asked about how often beneficiaries attended each activity, at least 50% of the mothers reported joining mother-to-mother support groups, mother support, and counseling activities monthly. About 50% of them instead reported joining cooking demonstrations and community events yearly.

The self-reported attendance rate collected through the endline survey is much lower than the attendance rate from SCI monitoring data. Administrative data from SCI find that in *Cash+SBCC* villages, 99% of enrolled mothers attended SBCC sessions, with 18% attending four times or less and 81% attending five times or more in a year. There are a few reasons for which we can speculate the two data are not so-well aligned. First, these measures are self-reported, so there might be potential recall issues. Specifically, in the endline survey, while the enumerators listed to the mothers each activity they could have joined, they did not do the same for the list of things they could have learned from the material. It is possible, then, that when women had to freely recall, the list they self-reported in not exhaustive since they may not have remembered everything in that moment. Second, it is also possible that mothers do not know exactly which activities are part of LEGACY or not, and they might mis-report their participation. Overall, administrative monitoring data (from SCI) are preferred to draw conclusions. The self-reported measures were incorporated in the questionnaire as an extra-check and upon request from SCI.

5. The Government Model

In addition to the main randomized experiment described above in this report, the research team compared the performance of giving the maternal cash transfer through Government Health Workers, rather than a Microfinance Institution (as was the case with Pact Global Microfinance Fund in the main RCT). Considering budgetary and feasibility constraints, the Government Model—which we will refer as GOV hereafter—was only possible in Pakkoku Township across 18 remote and 22 non-remote villages (beyond and within a two-hour radius from the main town or city, respectively). We compared these 40 GOV villages with the *Cash-Only* treatment arm from the RCT study, which covers 48 other villages.

Since the assignment of these villages to either receiving the cash transfers through GOV or PGMF was not random, we applied a Propensity Score Matching (PSM) procedure to get a comparable sample of villages between the two models. In practice, we matched villages in the GOV and *Cash-Only* groups based on the probability of their socio-demographic characteristics prior to the intervention using data from the 2016 census. In addition, we restrict our analysis to villages with

Common Support, which assures that villages with the same characteristics have a positive probability of being assigned to both models (Heckman, LaLonde, and Smith, 1999). After restricting our sample to Common Support, we are left with 32 of the 40 villages in the GOV-led group and all of the 48 villages in the PGMF-led *Cash-Only* group. We then matched villages in the GOV group to the *Cash-Only* group based on their propensity score to obtain a balanced and comparable sample between the two models (32 villages for each group). Results are presented in Figure 23.[15]

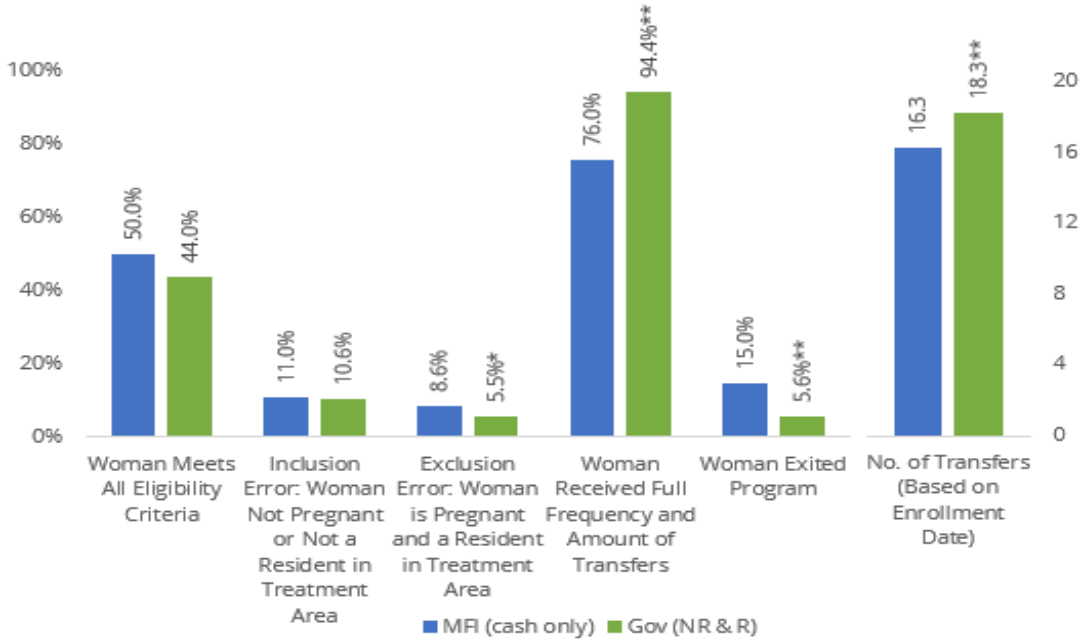
We find no statistically significant differences in women who met the eligibility criteria across the two models and no differences in inclusion errors (including not eligible women in the program). The GOV group, however, tends to have fewer exclusion errors than the *Cash-Only* group (excluding eligible women from the program). In particular, the GOV model has a 3.1 percentage point lower probability of exclusion error (5.5% in GOV versus 8.6% in *Cash-Only*, $p < 0.1$). Among the women that self-reported they are enrolled in the program, those who received the cash transfer through the GOV model have an 18.4 percentage point higher probability of having received the full frequency and amount of transfers (94.4% in GOV versus 76% in the *Cash-Only* group, $p < 0.05$). In fact, enrolled women in the GOV model received on average two more transfers than the PGMF-led model (18.3 monthly transfers in total under GOV versus 16.3 transfers in the *Cash-Only* group, $p < 0.05$). Finally, only 5.6% of women in the GOV model left the program relative to the 15% of the MFI model, a 9.4 percentage point statistically significant difference ($p < 0.05$).

Overall, the delivery of cash transfers through Government Health Workers outperformed the delivery through a third party, such as a Microfinance Institution. This suggests that a Government-led model should be considered as a potential option for the scale-up of MCCT in Myanmar. However, we need to be cautious before implementing this model at a larger scale, as more research should be conducted to understand the mechanisms underlying this finding. We include these results in the conclusions chapter, but since these are preliminary,[16] we do not provide further recommendations.

[15] The results are robust to an alternative model, a comparison between all the villages of the non-remote government model only and all the villages of the Cash-Only PGMF-led model.

[16] Analysis on the Government-led model data will be finalized by December 2020.

Figure 23: Government-led Model



6. Conclusions

After 30 months of exposure to the LEGACY program, we observe the following **impacts in treatment areas relative to the *Control* group:**

- **4 percentage point (p < 0.1)** reduction in the proportion of stunted children (6-29 months old) in the *Cash+SBCC* intervention arm, driven by a **4.4 percentage point (p < 0.05)** reduction in the proportion of children moderately stunted (Figure 5).
- **5.4 percentage point (p < 0.1)** reduction in the proportion of stunted children (24 to 29 months old) for those who received maximum exposure to the LEGACY program in the *Cash+SBCC* intervention arm (Figure 6).
- The reductions in the proportions of stunted children in the *Cash+SBCC* intervention arm are concentrated in lower socioeconomic areas (measured by women's education level in the village), suggesting that the program has a higher potential to reduce stunting in poorer areas (Figure 7).
- **2.8 percentage point (p < 0.1)** reduction in the proportion of children suffering from Moderate Acute Malnutrition in the *Cash+SBCC* intervention arm. (Figure 8).

Significant impacts of the *Cash+SBCC* intervention are also observed on the following *immediate and underlying* determinants of nutrition:

- **3,435.21 MKK (p < 0.01)** (2.28 USD) increase in food spending in the last 7 days for *Cash+SBCC,* and **1,446.79 MMK (p < 0.01)** (0.96 USD) increase in the *Cash-Only* treatment arm (Figure 9).
- **13.9 percentage point (p < 0.01)** increase in the proportion of mothers attending at least four antenatal care visits in the *Cash+SBCC* group, and a **9.1 percentage point (p < 0.01)** increase for the *Cash-Only* group (Figure 11).
- **9.6 more iron tablets (p < 0.05)** consumed by women during the prenatal period in the *Cash+SBCC* group, and **10.6 more tablets (p < 0.01)** in the *Cash-Only* group (Figure 13).
- **0.444 unit increase (p < 0.01)** in women's dietary diversity score is observed for the *Cash+SBCC* group and a **0.106 unit increase (p < 0.1)** for the *Cash-Only* group relative to the *Control* group (Figure 14). Moreover, *Cash+SBCC* beneficiaries are also **14.8 percentage points (p < 0.01)** more likely to meet the minimum dietary diversity score threshold.
- **3.2 percentage point increase (p < 0.01)** in knowing what exclusive breastfeeding means, **8.2 percentage point increase (p < 0.01)** in knowing the optimal length of breastfeeding, and **9.1 percentage point increase (p < 0.01)** in knowing the best time to introduce complementary feeding for the *Cash+SBCC* group. A **6.3 percentage point increase (p < 0.01)** in knowing the optimal length of breastfeeding, and **4.6 percentage point increase (p < 0.05)** in knowing the best time to introduce complementary feeding for the *Cash-Only* groups (Figure 15).
- **18.6 percentage point (p < 0.01)** increase in the proportion of children meeting the minimum dietary diversity score, and **21.1 percentage point (p < 0.01)** increase in the fraction of children receiving a minimum acceptable diet for the *Cash+SBCC* group (Figure 16).
- **38.6 percentage point increase (p < 0.01)** in the proportion of children (0 to 5 months old) exclusively breastfed in the last 24 hours, **24.9 percentage point decrease (p < 0.1)** in the proportion of children (12 to 15 months old) still being breastfed for the *Cash+SBCC* group*.* **20.3 percentage point increase**

(p < 0.1) in the proportion of children (0 to 5 months old) exclusively breastfed in the last 24 hours for the *Cash-Only* group (Figure 17).

- **4.3 percentage points (p < 0.05)** increase in the probability of having an improved wall material in the *Cash+SBCC* group and **3 percentage points (p < 0.1)** increase in the *Cash-Only* group (Figure 19).
- **0.49 unit (p < 0.01)** increase in hand-washing behavior index for the *Cash+SBCC* group (knowing).
- **6.5 percentage point (p < 0.05)** increase in the proportion of women who reported that they had control over some household money in the past month in *Cash-Only* arm (Figure 21). However, 99.6% of beneficiaries both in *Cash+SBCC* and *Cash-Only* arm reported having control over the monthly cash transfer amount.
- **62,751 MMK (p < 0.01)** and **69,222 MMK (p < 0.01)** decrease in informal debt for the *Cash+SBCC* and *Cash-Only* groups respectively, and **45,840 MMK (p < 0.1)** increase in savings only for *Cash+SBCC* (Figure 22).

We also compared the performance of giving the maternal cash transfer through government health workers rather than a microfinance institution (Figure 23):

- **3.1 percentage point (p < 0.1)** decrease of exclusion errors from the program in the Government-led model relative to the MFI-led model.
- **18.4 percentage point (p < 0.05)** increase in the number of women that received the full frequency and amount of transfers in the Government-led model relative to the MFI-led model.
- **9.6 percent (p < 0.05)** less women exited the program in Government-led model relative to the MFI-led model.

7. Recommendations

Based on these findings, we emphasize several two lessons from the research:

1. Cash transfers alone may not be enough to influence mothers' behavior and children's health outcomes. Our results indicate that **cash transfers targeting young children should be combined with SBCC interventions**.

2. Impacts of the program are more pronounced in children that received nearly 30 months of cash and SBCC exposure. This underscores **the importance of targeting children during the critical window of the first 1,000 days of life.**

There are additional important lessons that we can draw specifically on the role and definition of SBCC.

1. As the SBCC curriculum was defined in our study, **SBCC was fundamental in changing mothers' and children's dietary diversity score, mothers' knowledge and practices on breastfeeding, and WASH practices, which are all factors contributing to improve children's nutrition.** SBCC also had broader impacts on household savings and use of resources on durable assets.
2. **Both *Cash+SBCC* and *Cash-Only* treatments led to an increased food consumption, use of ANC, and use of iron tablets during pregnancy.**
3. **SBCC did not help improve women's decision making on spending household income.**

We encourage government stakeholders to consider these fundamental lessons when designing and implementing cash transfers programs in Myanmar. Based on the results of our evaluation, cash transfers alone do not appear to trigger statistically significant changes to chronic undernutrition. In support of the Government's strategy to implement MCCT combined with SBCC, this research confirms that cash transfers should be combined with SBCC activities, and that the targeted beneficiaries—pregnant mothers in their last two trimesters and their children under two years-old—should be ensured full program coverage throughout the critical window of the first 1,000 days of a child's life.

While this study provides conclusive results on the impact of cash transfers with complementary SBCC activities, there are additional unanswered questions regarding the impact of these interventions.

First, this study design compared the impacts of cash transfers (Treatment arm 2: *Cash-Only*) and its combination with SBCC interventions (Treatment arm 1: *Cash+SBCC*). While the study concludes that SBCC combined with cash transfers is pivotal to reduce children stunting, there are lingering questions about the effects of running *only* the SBCC. This future line of research could provide additional evidence

in Myanmar (in addition to existing research in other countries)[17] on the effectiveness of exclusive SBCC programming versus cash transfers *and* SBCC. In particular, the program affected the proportion of children moderately but not severely stunted. The reasons behind this are not clear and further research is required to understand how this needs to be addressed. It remains fundamental that further research is designed to explore the mechanisms why this is the case.

Second, and more importantly, additional research on the SBCC information package is needed to understand what works and what is needed to improve children's nutrition. SBCC was fundamental in changing mothers' IYFC knowledge and practices, key factors in improving stunting. However, it also had broader impacts on savings and durable assets, and it did not improve women's decision making on household income. On the one hand, it is important to understand which part of the SBCC curriculum worked well and which other parts could be improved to maximize health gains. It is also fundamental to prioritize key messages for behavioral changes in the SBCC curriculum to make sure that the targeted health gains (in this case reduction in stunting) are maximized. Additional research could provide evidence on an alternative, and potentially more minimal and cost-effective, set of SBCC curriculum and activities to reach the same health gains. On the other hand, future studies should explore the mechanisms through which SBCC combined with cash improved other economic outcomes, despite the actual curriculum not including specific topics. It is also important to shed more light on why SBCC limits potential positive effects on women's intra-household decision making.

Third, it is necessary to understand the cost-effectiveness of the combination of *Cash+SBCC*. Since SBCC components increase the cost of program delivery, it remains to be answered whether the amount of money spent on SBCC per percentage point in the reduction of stunting is providing the best value for money, compared to well-defined WHO cost-effectiveness thresholds. IPA proposes to conduct a cost-effectiveness analysis that compares both program variations—*Cash+SBCC* and *Cash-Only*. The cost-effectiveness analysis could be extended to hypothetical variations in the provisions of the program to inform stakeholders on future roll-outs of similar programs. It could also be extended to comparisons of similar programs run by SCI in other countries.

Finally, taking advantage of the high and growing internet penetration rates in the country (ITU, 2018), we face a unique window of opportunity to test how the use of digital platforms can provide a more cost-effective way to deliver cash transfers and SBCC. We believe that further research should be done regarding how to expand

[17] Such as Save the Children program in Somaliland.

maternal and child cash transfers in Myanmar through technology. Since this approach is already being piloted in parts of the country, it is important to assess how these innovative technological channels can impact the strength and cost-effectiveness of program delivery.

We believe that the findings on LEGACY's impact are relevant information for Government of Republic of the Union of Myanmar (GoUM), particularly for the Ministry of Social Welfare, Relief, and Resettlement and the Ministry of Health and Sports, since as they lead the scale-up of maternal and child cash transfer programs, combined with SBCC, in line with the Myanmar National Social Protection Strategic Plan (GoM, 2014), and in support of the current strategy to combine current cash transfers with SBCC. We believe the findings are important for funding and programmatic decisions by donors such as LIFT and implementing partners such as Save the Children, UNICEF and others. The research is also helpful for other stakeholders who aim to improve chronic malnutrition in Myanmar.

References

[1] Almond, Douglas, and Janet Currie. 2011. Killing Me Softly: The Fetal Origins Hypothesis. *Journal of Economic Perspectives*, 25 (3): 153-72.

[2] Avula, R., Menon, P., Saha, K., Bhuiyan, M., Chowdhury, A., Siraj, S., and Frongillo, E. 2013. A program impact pathway analysis identifies critical steps in the implementation and utilization of a behavior change communication intervention promoting infant and child feeding practices in Bangladesh. *The Journal of Nutrition*, 143 (12), 2029–2037.

[3] Bhutta, Z., Das, J., Rizvi, A., Gaffey, M., Walker, N., Horton, S., … Black, R. 2013. Evidence-based interventions for improvement of maternal and child nutrition: What can be done and at what cost? *The Lancet*, 382(9890), 452–477.

[4] der Merwe, L. V., Moore, S., Fulford, A., Halliday, K., Drammeh, S. S., and Young, S. 2013. Long-chain pufa supplementation in rural African infants: A randomized controlled trial of effects on gut integrity, growth, and cognitive development. *American Journal of Clinical Nutrition*, 97, 45–57.

[5] Engle, P., M. Black, J. Behrman, M. Cabral de Mello, P. Gertler, L. Kapiriri, R. Martorell, M. E. Young, and the International Child Development Steering Group. 2007. "Strategies to Avoid the Loss of Developmental Potential in More than 200 Million Children in the Developing World." *Lancet,* 369, 229-42.

[6] Fiszbein, Ariel, and Norbert Schady. 2009. Conditional Cash Transfers: reducing present and future poverty. Washington, DC: World Bank.

[7] Gillespie S, Haddad L, Mannar V, Menon P, Nisbett. 2013. The politics of reducing malnutrition: building commitment and accelerating progress. *Lancet.* 10;382(9891), 552-69.

[8] GoM. 2014. Myanmar National Social Protection Strategic Plan. The Republic of the Union of Myanmar. Retrieved from https://www.social-protection.org/gimi/gess/RessourcePDF.action?ressource.ressourceId=50377

[9] Haddad et al. 2015. The Global Nutrition Report 2014: Actions and Accountability to Accelerate the World's Progress on Nutrition. *Journal of Nutritio*n; 145(4), 663-671.

[10] Headey, D., Chiu, A., and Kadiyala, S. 2012. Agriculture's role in the Indian enigma: Help or hindrance to the malnutrition crisis? *Food Security*, 4, 87–102.

[11] Heckman, J., R. LaLonde, and J. Smith (1999): "The Economics and Econometrics of Active Labor Market Programs," in *Handbook of Labor Economics Vol.III*, ed. by O. Ashenfelter, and D. Card, pp. 1865–2097. Elsevier, Amsterdam.

[12] Hoddinott, J., Ahmed, A., Karachiwalla, N., and Roy, S. 2018. Nutrition behaviour change communication causes sustained effects on IYCN knowledge in two cluster-randomised trials in Bangladesh. *Maternal & Child Nutrition*, 14 (1).

[13] Hoddinott, J., Ahmed, I., Ahmed, A., and Roy, S. 2017. Behavior change communication activities improve infant and young child nutrition knowledge and practice of neighboring non-participants in a cluster-randomized trial in rural Bangladesh. *pLoS One*, 12(6), e0179866.

[14] Hoddinott, J., Behrman, J., Maluccio, J., Melgar, P., Quisumbing, A., Ramirez-Zea, M., & Martorell, R. 2013b. Adult consequences of growth failure in early childhood. *The American Journal of Clinical Nutrition*, ajcn–064584.

[15] Hoddinott, John, Harold Alderman, Jere R. Behrman, Lawrence Haddad, Susan Horton. 2013a. The economic rationale for investing in stunting reduction. *Maternal and Child Nutrition*, 9 (2), 69-82.

[16] ITU. 2018. Myanmar. Retrieved from https://www.itu.int/en/ITU-D/LDCs/Documents/2017/Country%20Profiles/Country%20Profile_Myanmar.pdf

[17] Lamstein, S., T. Stillman, P. Koniz-Booher, A. Aakesson, B. Collaiezzi, T. Williams, K. Beall, and M. Anson, 2014. "Evidence of Effective Approaches to Social and Behavior Change Communication for Preventing and Reducing Stunting and Anemia: Report from a Systematic Literature Review". Arlington, VA: USAID/ Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project.

[18] León M. and Younger S.D. 2007. Transfer payments, mothers' income and child health in Ecuador. The *Journal* of Development Studies, 43(6), 1126-1143, DOI: 10.1080/00220380701466708

[19] Leroy, Jef. 2011. "ZSCORE06: Stata module to calculate anthropometric z-scores using the 2006 WHO child growth standards," Statistical Software Components S457279, Boston College Department of Economics, revised 04 Oct 2011, https://ideas.repec.org/c/boc/bocode/s457279.html

[20] Levere M, Acharya G., and Bharadwaj P. 2016. The Role of Information and Cash Transfers on Early Childhood Development, Evidence from Nepal. World Bank paper.

[21] Luo R., Yaojiang Shi, Linxiu Zhang, Huiping Zhang, Grant Miller, Alexis Medina, Scott Rozelle. 2012. The Limits of Health and Nutrition Education: Evidence from Three Randomized-Controlled Trials in Rural China, *CESifo Economic Studies*, 58 (2), June 2012, 385–404 https://doi.org/10.1093/cesifo/ifs023

[22] Macours, Karen, Norbert Schady, and Renos Vakis. 2012. "Cash Transfers, Behavioral Changes, and Cognitive Development in Early Childhood: Evidence from a Randomized Experiment: Dataset." *American Economic Journal: Applied Economics*. http://dx.doi.org/10.1257/app.4.2.247.

[23] Manley, J., Gitter, S., and Slavchevska, V. 2013. How effective are cash transfers at improving nutritional status? *World Development*, 48, 133–155.

[24] Muller, O., Garenne, M., Reitmaier, P., Zweeden, A. B. V., Kouyate, B., and Becher, H. 2003. Effect of zinc supplementation on growth in west African children: A randomized

double-blind placebo-controlled trial in rural Burkina Faso. *Int'l Journal of Epidemiology*, 32, 1098–102.

[25] Newton, S., Owusu-Agyei, S., and Kirkwood, B. 2007. Is there any monitoring of the quality of vitamin a capsules used in supplementation programs? *American Journal of Clinical Nutrition*, 86, 1254.

[26] Paul, K., Muti, M., Khalfan, S., Humphrey, J., Caffarella, R., and Stoltzfus, R. 2011. Beyond food insecurity: How context can improve complementary feeding interventions. *Food Nutrition Bulletin*, 32(3), 244–53.

[27] Paxson, C. and N. Schady. 2007. "Cognitive Development Among Young Children in Ecuador: The Role of Health, Wealth and Parenting." Journal of Human Resources 42(1): 49-84.

[28] Paxson, Christina, and Norbert Schady. 2010. "Does Money Matter? The Effects of Cash Transfers on Child Health and Development in Rural Ecuador." *Economic development and Cultural Change* 59 (1): 187–230.

[29] Prina, S. and Royer, H. 2014. The importance of parental knowledge: Evidence from weight report cards in Mexico. *Journal of Health Economics*, 37, 232–247.

[30] Ruel, Marie, Harold Alderman. 2013. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *Lancet, Maternal and Child Nutrition Series*, 382 (9891), 536-551.

[31] Seidenfeld D., Handa S., Tembo G., Michelo S., Scott C.H. and Prencipe L. 2014. The Impact of an Unconditional Cash Transfer on Food Security and Nutrition: The Zambia Child Grant Programme. Institute of Development Studies

[32] Smith LC., Haddad L, Reducing Child Undernutrition: Past Drivers and Priorities for the Post-MDG Era, *World Development*, 68.

[33] Sunny S Kim, Phuong Hong Nguyen, Lan Mai Tran, Tina Sanghvi, Zeba Mahmud, Mohammad Raisul Haque, Kaosar Afsana, Edward A Frongillo, Marie T Ruel, Purnima Menon, 2018. "Large-Scale Social and Behavior Change Communication Interventions Have Sustained Impacts on Infant and Young Child Feeding Knowledge and Practices: Results of a 2-Year Follow-Up Study in Bangladesh". *The Journal of Nutrition*, 148(10), 1605–1614.

[34] UNICEF. 2015. UNICEF's approach to scaling up nutrition for mothers and their children. Discussion paper. Programme Division, UNICEF, New York, June 2015.

[35] UNSCN. 2010. Sixth Report on the World Nutrition Situation: Progress in Nutrition: UNSCN Secretariat c/o WHO.

[36] World Bank. (2017). World development indicators. Retrieved from http://data.worldbank.org

Annex 1: SBCC Exposure

Table 1: Summary Statistics on SBCC Exposure (Full Sample)

Variable	Control (mean)	Control (sd)	Control (n)	Cash+ SBCC (mean)	Cash+ SBCC (sd)	Cash+ SBCC (n)	*Cash-Only* (mean)	*Cash-Only* (sd)	*Cash-Only* (n)
Know logo MCCT	0.17	0.38	1164	0.82	0.39	1709	0.75	0.43	1613
Know logo MCCT [Don't know]	0	0	1164	0	0	1709	0	0	1613
Know info materials MCCT	0.63	0.48	1281	0.93	0.26	1750	0.89	0.31	1642
Know info materials MCCT [Don't know]	0	0	1281	0	0	1750	0	0	1642
Join pjt activities - no	0.89	0.32	1458	0.58	0.49	1811	0.91	0.29	1703
Join pjt activities - Mom to mom support	0	0.04	1458	0.08	0.28	1811	0.02	0.14	1703
Join pjt activities - home visits counseling	0.01	0.1	1458	0.07	0.26	1811	0.01	0.09	1703
Join pjt activities - home visits mom support	0	0	1458	0.03	0.18	1811	0.01	0.07	1703
Join pjt activities - cooking demonst	0	0.04	1458	0.26	0.44	1811	0.01	0.11	1703
Join pjt activities - community event	0	0.03	1458	0.08	0.27	1811	0.01	0.12	1703
Join pjt activities - don't know	0.1	0.3	1458	0.03	0.16	1811	0.03	0.18	1703
Join pjt activities - other	0	0	1458	0	0.05	1811	0	0	1703
Learn from tools - ANC 4 times	0.13	0.34	807	0.15	0.36	1619	0.16	0.36	1462
Learn from tools - eat 4 stars pregnancy	0.08	0.28	807	0.18	0.38	1619	0.11	0.31	1462
Learn from tools - eat 4 stars breastfeeding	0.1	0.3	807	0.21	0.41	1619	0.14	0.35	1462
Learn from tools - breastf 1 hr	0.2	0.4	807	0.24	0.43	1619	0.18	0.38	1462
Learn from tools - only breast until 6m	0.23	0.42	807	0.34	0.47	1619	0.27	0.45	1462
Learn from tools - feed 4 stars child	0.16	0.37	807	0.42	0.49	1619	0.3	0.46	1462
Learn from tools - feed responsively child	0.21	0.41	807	0.35	0.48	1619	0.31	0.46	1462
Learn from tools - wash hands	0.5	0.5	807	0.72	0.45	1619	0.58	0.49	1462
Learn from tools - other	0	0.06	807	0.01	0.09	1619	0.01	0.09	1462
Learn from tools - don’t know	0.31	0.46	807	0.11	0.32	1619	0.18	0.38	1462
Changed behavior: ANC 4 times	0.27	0.44	276	0.16	0.37	868	0.14	0.35	656
Changed behavior: eat 4 stars pregnancy	0.12	0.33	276	0.18	0.39	868	0.12	0.32	656

Changed behavior: eat 4 stars breastfeeding	0.14	0.35	276	0.21	0.41	868	0.13	0.33	656
Changed behavior: breastf 1 hr	0.34	0.47	276	0.21	0.41	868	0.22	0.42	656
Changed behavior: only breast until 6m	0.37	0.48	276	0.37	0.48	868	0.34	0.47	656
Changed behavior: feed 4 stars child	0.14	0.35	276	0.42	0.49	868	0.34	0.48	656
Changed behavior: feed responsively child	0.27	0.44	276	0.39	0.49	868	0.39	0.49	656
Changed behavior: wash hands	0.71	0.46	276	0.81	0.39	868	0.72	0.45	656
Changed behavior: don’t know	0	0.06	276	0	0.05	868	0.01	0.08	656
Changed behavior: other	0.01	0.1	276	0.01	0.1	868	0.01	0.1	656
Learn from act - ANC 4 times	0		1	0.11	0.31	102	0.25	0.44	36
Learn from act - eat 4 stars pregnancy	0		1	0.1	0.3	102	0.11	0.32	36
Learn from act - eat 4 stars breastfeeding	0		1	0.03	0.17	102	0.08	0.28	36
Learn from act - breastf 1 hr	0		1	0.11	0.31	102	0.36	0.49	36
Learn from act - only breast until 6m	0		1	0.12	0.32	102	0.31	0.47	36
Learn from act - feed 4 stars child	0		1	0.44	0.5	102	0.14	0.35	36
Learn from act - feed responsively child	0		1	0.39	0.49	102	0.25	0.44	36
Learn from act - wash hands	1		1	0.75	0.44	102	0.44	0.5	36
Learn from act - other	0		1	0.01	0.1	102	0	0	36
Learn from act - don’t know	0		1	0.07	0.25	102	0	0	36
Changed behavior after activities/materials	0.34	0.47	807	0.54	0.5	1620	0.45	0.5	1462
Changed behavior: ANC 4 times	0.27	0.44	276	0.16	0.37	868	0.14	0.35	656
Changed behavior: eat 4 stars pregnancy	0.12	0.33	276	0.18	0.39	868	0.12	0.32	656
Changed behavior: eat 4 stars breastfeeding	0.14	0.35	276	0.21	0.41	868	0.13	0.33	656
Changed behavior: breastf 1 hr	0.34	0.47	276	0.21	0.41	868	0.22	0.42	656
Changed behavior: only breast until 6m	0.37	0.48	276	0.37	0.48	868	0.34	0.47	656
Changed behavior: feed 4 stars child	0.14	0.35	276	0.42	0.49	868	0.34	0.48	656
Changed behavior: feed responsively child	0.27	0.44	276	0.39	0.49	868	0.39	0.49	656
Changed behavior: wash hands	0.71	0.46	276	0.81	0.39	868	0.72	0.45	656
Changed behavior: other	0.01	0.1	276	0.01	0.1	868	0.01	0.1	656

Table 2: Summary Statistics on SBCC Exposure (Enrolled Respondents, Self-reported)

Variable	Control (mean)	Control (sd)	Control (n)	Cash+ SBCC (mean)	Cash+ SBCC (sd)	Cash+ SBCC (n)	*Cash-Only* (mean)	*Cash-Only* (sd)	*Cash-Only* (n)
Know logo MCCT	0.82	0.4	11	0.98	0.13	1200	0.95	0.21	1079
Know logo MCCT [Don't know]	0	0	11	0	0	1200	0	0	1079
Know info materials MCCT	0.91	0.3	11	0.99	0.09	1214	0.99	0.12	1086
Know info materials MCCT [Don't know]	0	0	11	0	0	1214	0	0	1086
Join pjt activities - no	0.82	0.4	11	0.44	0.5	1216	0.91	0.29	1088
Join pjt activities - Mom to mom support	0.09	0.3	11	0.12	0.32	1216	0.03	0.18	1088
Join pjt activities - home visits counseling	0	0	11	0.1	0.3	1216	0.01	0.11	1088
Join pjt activities - home visits mom support	0	0	11	0.05	0.21	1216	0.01	0.09	1088
Join pjt activities - cooking demonst	0.18	0.4	11	0.39	0.49	1216	0.02	0.13	1088
Join pjt activities - community event	0	0	11	0.11	0.31	1216	0.02	0.14	1088
Join pjt activities - don't know	0	0	11	0	0.06	1216	0	0.07	1088
Join pjt activities - other	0	0	11	0	0.06	1216	0	0	1088
Learn from tools - ANC 4 times	0.1	0.32	10	0.17	0.37	1204	0.15	0.36	1071
Learn from tools - eat 4 stars pregnancy	0	0	10	0.21	0.41	1204	0.12	0.32	1071
Learn from tools - eat 4 stars breastfeeding	0.2	0.42	10	0.25	0.43	1204	0.15	0.36	1071
Learn from tools - breastf 1 hr	0.5	0.53	10	0.26	0.44	1204	0.18	0.39	1071
Learn from tools - only breast until 6m	0.3	0.48	10	0.38	0.49	1204	0.3	0.46	1071
Learn from tools - feed 4 stars child	0.1	0.32	10	0.49	0.5	1204	0.34	0.47	1071
Learn from tools - feed responsively child	0.3	0.48	10	0.39	0.49	1204	0.33	0.47	1071
Learn from tools - wash hands	0.7	0.48	10	0.77	0.42	1204	0.61	0.49	1071
Learn from tools - other	0	0	10	0.01	0.09	1204	0.01	0.1	1071
Learn from tools - don’t know	0.2	0.42	10	0.05	0.22	1204	0.15	0.35	1071
Changed behavior: ANC 4 times	0.4	0.55	5	0.16	0.37	724	0.11	0.32	501
Changed behavior: eat 4 stars pregnancy	0	0	5	0.2	0.4	724	0.1	0.3	501
Changed behavior: eat 4 stars breastfeeding	0	0	5	0.23	0.42	724	0.12	0.32	501

Changed behavior: breastf 1 hr	0.2	0.45	5	0.21	0.41	724	0.22	0.41	501
Changed behavior: only breast until 6m	0.2	0.45	5	0.36	0.48	724	0.35	0.48	501
Changed behavior: feed 4 stars child	0.2	0.45	5	0.45	0.5	724	0.39	0.49	501
Changed behavior: feed responsively child	0.2	0.45	5	0.39	0.49	724	0.43	0.49	501
Changed behavior: wash hands	0.8	0.45	5	0.81	0.39	724	0.74	0.44	501
Changed behavior: don’t know	0	0	5	0	0.04	724	0.01	0.09	501
Changed behavior: other	0	0	5	0.01	0.1	724	0.01	0.09	501
Learn from act - ANC 4 times			0	0.11	0.32	97	0.25	0.44	36
Learn from act - eat 4 stars pregnancy			0	0.1	0.31	97	0.11	0.32	36
Learn from act - eat 4 stars breastfeeding			0	0.03	0.17	97	0.08	0.28	36
Learn from act - breastf 1 hr			0	0.11	0.32	97	0.36	0.49	36
Learn from act - only breast until 6m			0	0.11	0.32	97	0.31	0.47	36
Learn from act - feed 4 stars child			0	0.46	0.5	97	0.14	0.35	36
Learn from act - feed responsively child			0	0.41	0.49	97	0.25	0.44	36
Learn from act - wash hands			0	0.73	0.45	97	0.44	0.5	36
Learn from act - other			0	0.01	0.1	97	0	0	36
Learn from act - don’t know			0	0.07	0.26	97	0	0	36
Changed behavior after activities/materials	0.5	0.53	10	0.6	0.49	1204	0.47	0.5	1071
Changed behavior: ANC 4 times	0.4	0.55	5	0.16	0.37	724	0.11	0.32	501
Changed behavior: eat 4 stars pregnancy	0	0	5	0.2	0.4	724	0.1	0.3	501
Changed behavior: eat 4 stars breastfeeding	0	0	5	0.23	0.42	724	0.12	0.32	501
Changed behavior: breastf 1 hr	0.2	0.45	5	0.21	0.41	724	0.22	0.41	501
Changed behavior: only breast until 6m	0.2	0.45	5	0.36	0.48	724	0.35	0.48	501
Changed behavior: feed 4 stars child	0.2	0.45	5	0.45	0.5	724	0.39	0.49	501
Changed behavior: feed responsively child	0.2	0.45	5	0.39	0.49	724	0.43	0.49	501
Changed behavior: wash hands	0.8	0.45	5	0.81	0.39	724	0.74	0.44	501
Changed behavior: other	0	0	5	0.01	0.1	724	0.01	0.09	501

Annex 2: Questionnaire

Printable version at
https://www.dropbox.com/s/axmjqxi136h1b0x/ENDLINE_RCT_printable.doc?dl=0

Annex 3: LEGACY Material

Figure 1: 1,000 Days MCCT logo

Figure 2: 1,000 Days handbook

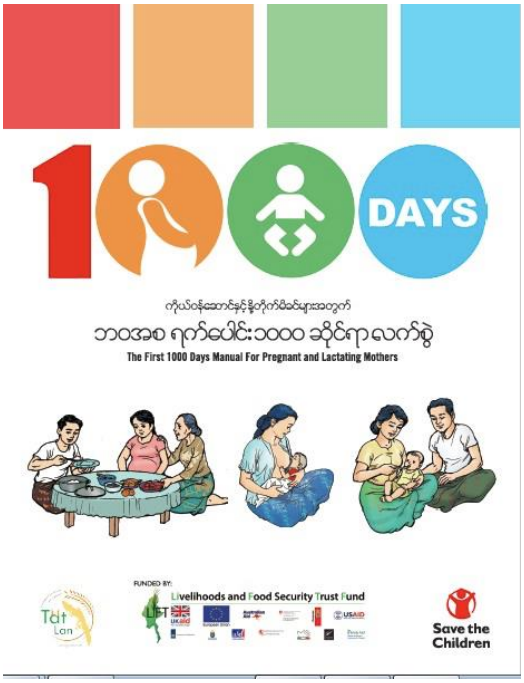


Figure 3: Poster - 4 Stars for Complementary Feeding

Figure 4: Sticker - IYCF Key Messages

Figure 5: Sticker – Handwashing

Figure 6: Flipchart - IYCF Counselling

Figure 7: Pamphlet - IYCF Key Messages

Figure 8: Calendar - IYCF Key Messages