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PROGRAM EVALUATION

Strategic Layering to Improve Household Gender Dynamics for Optimal Nutrition in Niger

Endline Report March 2024

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Executive Summary

Background

Malnutrition is a pervasive problem throughout the west African nation of Niger. While the lack of availability, access to, and utilization of nutritious foods adversely affects many Nigeriens, these realities disproportionately impact Niger's most vulnerable populations, including children under 5 years of age, pregnant and lactating women, and adolescent girls. According to the World Bank, in 2022, the prevalence of U5 stunting in Niger was 47.7% while U5 wasting was 10.9%. In the Zinder region of Niger, approximately two thirds of U5 children are stunted, while roughly one in seven are wasted.

In this context, Catholic Relief Services (CRS) in Niger has been implementing an innovative, multidimensional approach to address maternal and child malnutrition in its Resilience and Food Security Activity project entitled, Girma. The [Girma project](#) is a USAID-supported program (Bureau of Humanitarian Assistance) in the Zinder region of rural Niger. The project has been implemented since 2018 and will continue through 2025 covering 622 administrative villages across 11 communes in two departments of the Zinder region. Girma was designed to improve and sustain food and nutrition security and resilience among vulnerable households and communities in Niger. Overall, it had 11 key areas of intervention, including economic strengthening using Savings and Internal Lending Communities (SILC), nutrition education of mothers of children under five years using a Care Group model (CARE), and a nutrition-integrated couples strengthening intervention entitled *Maison Familiale Harmonieuse* (MFH). This program evaluation was motivated by the desire to understand the effectiveness of the integration, sequencing, and layering of these three intervention modalities on maternal and child nutrition outcomes.

Specific aims

- 1 To evaluate the effectiveness of layering SILC, CARE, and MFH on maternal and child dietary diversity.
- 2 To understand the program pathways through which SILC, CARE, and MFH activities may have affected maternal and child dietary diversity.
- 3 To understand the process-related factors that may have contributed to primary dietary outcomes.
- 4 To generate recommendations for improving/scaling this layered and integrated program approach.

Evaluation methods

This evaluation utilized a longitudinal, mixed-methods ‘embedded’ research design conducted between 2021 – 2023. Program impact was evaluated using an 18-month, prospective, quasi-experimental design that included both an impact evaluation component and a process evaluation component. Four qualitative methods were used to understand ‘why’ and ‘how’ the intervention activities may have impacted dietary practices. Qualitative findings and the secondary analysis of program documents were used to triangulate quantitative findings in an integrated, mixed-methods evaluation approach. A Theory of Change served as the framework from which data collection methods, instrument questions, sampling procedures, and analytic processes were developed. Doing so allowed for an evaluation of the program modalities based on expected pathways toward behavioral impact. Survey data were collected at baseline (February, 2022- March, 2022) and approximately 12 months later at endline throughout communes in three districts of Zinder region. Qualitative data collection occurred in the same communes from November – December 2022 from participants in two study arms from Dungass and Magaria districts, as well as from control households in the Mirriah district.

Key findings

The Girma project, which included 11 different program modalities, directly reached 770,559 uniquely-identified participants between 2020 and 2023. During the same time period, 79,693 men and women participated in SILC Group activities (58% of program target); 122,822 women attended at least one Care Group (102% of target); and 98,371 men and women joined MFH activities (74% of target). A greater proportion of men to women were reached by SILC and MFH activities relative to program targets, while the absolute number of women reached was greater in both.



Maternal and child diets. The dietary diversity scores of women increased in both SILC + CARE (I1) and SILC + CARE + MFH (I2) at endline, relative to those of control. Maternal knowledge (I2 only), self-efficacy (I1 and I2), and intention (I1 and I2) to consume a more diverse diet also increased at endline; however, maternal attitudes (I1 and I2) toward doing so worsened. Although a treatment effect was not observed on child dietary diversity scores, children consumed more food groups in I2 vs I1 when using the 4-STAR diet for dietary measurement. Maternal self-efficacy and intention to improve the diets of their children increased in both I1 and I2 intervention arms, while maternal attitudes improved only in I2 relative to control. There was very little positive effect of either I1 or I2 on the psychosocial outcomes of husbands/fathers toward maternal or child diets, overall.

Among the 655 households eligible for participation in both a Care Group and a SILC Group program activity, just 24% (156) reported doing so at endline. Among the 806 households eligible for full I2 participation in all three program modalities, just 15% (117) reported doing so at endline. Low participation of eligible households across all three CARE, SILC, and MFH program arms limited participant exposure to key messages layered across activities, likely limiting program impact on dietary outcomes. Greater financial and food insecurity throughout 2022 may also have contributed to the observed results.



Household savings and loans. Husbands who participated in SILC groups reported typical median savings of \$0.21 in I1 and \$0.25 in I2 study arms

each week, while wives reported \$0.33 in both I1 and I2. While the reported savings fell within an expected USD amount range given program design, the qualitative data suggest that such amounts may have been insufficient for improving dietary quality in the face of limited financial means relative to food prices, lower-than-usual agricultural production in 2022, and general market inaccess. Normative views toward the importance of allocating household income for buying more diverse foods improved among SILC group husbands (but not wives) in both intervention arms; however, participants explained that doing so was difficult in practice. In fact, >80% of participants reported spending more household income for food purchases in 2022 compared to 2021.



Marital satisfaction and joint decision-making. Most interview respondents explained that MFH participation helped them improve their marital relationships through clearer communication, better decision making with fewer disputes, and improved understanding of one another. Survey findings corroborate qualitative findings: both husbands and wives reported improved marital relationship quality in both intervention arms and irrespective of marital structure (36% of sampled households practiced polygamy). However, there was no observed intervention effect on the ability of wives to have more equitable inputs when making household decisions around nutrition at endline. Culturally, heads of household (husbands) have most, if not all, decision-making power around household finances, health care, and food purchasing decisions in this context. Gendered social norms are slow to change, especially in rural Niger where longstanding culturally-bound rules shape individual behaviors specific to health.



Process evaluation findings. Overall, MFH facilitators reported positive experiences coordinating and interacting with other program implementers across activities. Interviews with both MFH facilitators and participants indicated that the religious and cultural tailoring of MFH curricula was a strength of implementation. MFH couples indicated 'high' or 'very high' satisfaction of most categories pertaining to the structural aspects of MFH sessions, for example comfortable MFH session facilities (99%), adequate session timing (96%), and understandable materials (99%). Similarly, MFH facilitators reported positive training experiences and expressed gratitude for gaining the requisite knowledge, skills, and confidence to lead those sessions. Some facilitators expressed a desire for additional trainings to cover various concepts related to both content (e.g., maternal health topics) and delivery (e.g., adult education approaches). The MFH nutrition module focusing on dietary diversity was not introduced until July 2022 and thus it reached some, but not all of the MFH participants who had finished their participation of the 16 prescribed sessions prior to that date. The fidelity of MFH content delivered was 94 - 99% during the three core MFH modules, but 64 - 74% for the two nutrition modules. Facilitators covered prescribed health topics in 62 - 77% of observations, and 4-STAR diet topics in 54 - 92% of them. The key message related to dietary diversity was covered in approximately 70% of MFH sessions observed.

Recommendations

Recommendations stemming from this program evaluation were made by stakeholders, including the research team, at the conclusion of the evaluation and are presented below in summary form.

- 1 Enhancing the intensity, or dose delivered, of complementary livelihood activities delivered may help participants overcome food security-related barriers currently limiting nutrition-related behavior change.** Economic empowerment, agricultural development, and livelihood development activities have complemented program activities, yet nutritious food inaccess persisted during the evaluation period among program participants. A greater intensity of such activities may help improve participant access to diverse foods, even in the face of future shocks and hazards, moving forward.
- 2 Enacting deliberate strategies to improve recruitment and participation rates across layered activities may help ensure an adequate programming dose is received for desired behavior change.** Given the relatively low and inconsistent participation rates among husbands and wives both within and among the three program modalities, improving the layering of activities through more precise planning of concurrently integrated activities, including carefully timed roll out of staggered program activities and enhanced coordination efforts among implementers, may enhance participant exposure to messaging across modalities. Coupling such strategies with enhanced monitoring of participation rates across layered activities may also help with near, real-time course correction as needed.
- 3 Developing a revised and more guiding Theory of Change with clear outputs, outcomes, and impacts mapped onto nuanced program impact pathways to guide programming may improve implementation and evaluation efforts moving forward.** With two years of programming remaining, revisiting the original Theory of Change and updating it with specificity, including clearly defined outputs, through a co-creation process that builds on knowledge gained since project commencement in 2018 may serve as a useful blueprint for improved implementation and evaluation in years to come.

Conclusion

The combination of three program modalities showed a positive effect on maternal but not child dietary diversity scores during this 12-month program evaluation. Contextual factors that contributed to increased food prices relative to incomes throughout 2022, in combination with low program participation rates across layered activities, limited the ability of those individuals who were exposed to the integrated activities to improve their diet quality in a meaningful way. Overall, these three Girma activities resulted in positive intentions of both women and men to change behaviors that might contribute to better maternal and child nutrition but a combination of contextual and program implementation-related factors attenuated the ability of the activities to do so during the evaluation period.

Introduction

Nutrition situation overview

Malnutrition is a pervasive problem throughout the west African nation of Niger. While the lack of availability, access to, and utilization of nutritious foods adversely affects many Nigeriens, these realities disproportionately impact Niger's most vulnerable populations, including children under 5 years of age, pregnant and lactating women, and adolescent girls. According to the World Bank, in 2022, the prevalence of U5 stunting in Niger was 47.7% while U5 wasting was 10.9% (World Bank, n.d., b-c).

In the Zinder region of Niger, approximately two thirds of U5 children are stunted, while roughly one in seven are wasted (Feed the Future, 2018). The underlying causes in the Zinder region include poor harvests, lack of viable economic alternatives to rainfed agriculture, poor nutrition knowledge among caregivers, gender inequity, and lack of women's empowerment to make shared financial and nutrition decisions with their husbands (CRS, 2020). Women in Zinder earn very little income and thus have less household-level agency than do fathers who are culturally considered heads of household.

Girma Project: Long-term food security, improved nutrition, and resilience

In this context, Catholic Relief Services in Niger has been implementing an innovative, multidimensional approach to address maternal and child malnutrition in its Resilience and Food Security Activity project entitled, Girma (CRS, n.d.). The [Girma project](#) is a USAID-supported program (Bureau of Humanitarian Assistance) that has been implemented since 2018 and will continue through 2025 covering 622 administrative villages across 11 communes in two departments of the Zinder region: Magaria and Dungass. Girma was designed to improve and sustain food and nutrition security and resilience among vulnerable households and communities in Niger. Overall, it has 11 key areas of intervention, including economic strengthening using Savings and Internal Lending Communities (SILC), nutrition education of mothers of children under five years using a Care Group model (CARE), and a nutrition-integrated couples strengthening intervention entitled *Maison Familiale Harmonieuse* (MFH).

The approach focuses not on individual behavior change, but on husband-and-wife couples to improve their communication, women's empowerment, and shared-decision-making around household resource allocation for better nutrition. Evaluations of similar couples strengthening approaches in CRS programs from Ethiopia, Uganda, Cameroon, and Zambia have found improvements among a number of behavioral indicators including improved relationship quality, better communication among husbands and wives, as well as more shared decision-making related to childcare, large household decisions, HIV testing, and even sexual health. Given its potential for improving attitudes, shifting social norms, and changing behaviors in these other resource-constrained settings where CRS implements programs, this couples strengthening approach was layered onto the industry-standard nutrition messaging and income-strengthening activities as part of the

Girma project in rural Niger. CRS is one of several development actors working globally to layer intervention activities addressing gender dynamics onto usual behavior change modalities for synergistically improving maternal and child diets.

Girma's intervention activities are based on a growing body of evidence that supports integrated approaches for improving diet and nutrition indicators (Nguyen et al., 2017; Keats et al., 2021). In food-insecure environments, social and behavior change using nutrition education alone is usually insufficient for improving actual nutritional status and related dietary outcomes (Bhutta et al., 2013; Marquis et al., 2015). Although diverse diets – including those with foods that are nutrient-dense and animal-sourced – are one immediate determinant of child stunting, they are also expensive relative to typical household incomes in resource-constrained households like those of in rural Niger (Bai et al., 2020). According to the World Bank, the number of people in Niger who could *not* afford a healthy diet in 2021 was 23.2 million, a figure representing 92% of the national population (World Bank, n.d.-a).

Similar research conducted in other countries where CRS has implemented nutrition programming also found that the cost of a locally available, nutritious diet is substantially higher than that of less nutritious, more typical diets that tend to be energy dense but nutrient poor (Damu, 2019). Moreover, studies have found that household economic growth alone cannot ensure optimal nutritional outcomes (Vollmer et al., 2014), as many other factors (e.g., dietary intake, health status, sanitation facilities, care practices, access to social programs, the empowerment of mothers) play a combined role in child nutrition (Lentz et al., 2019; Quisumbing et al., 2021). Thus, layering a couples strengthening approach onto Girma nutrition education and savings/loans activities showed promise for improving maternal and child diets given the behavioral improvements found in the aforementioned Ethiopia, Uganda, Cameroon, and Zambia projects (CRS, 2012a; CRS, 2012b). One potential pathway for nutrition improvement may exist through greater women's empowerment as a result of couples strengthening activities to increase relationship quality and maternal agency in household-level decision making, as evidenced to some extent by the CRS-led, integrated Amashinga project in Burundi where a greater number of participants adopted good health and nutrition practices and gained better nutrition knowledge during its 2014 – 2019 implementation (CRS, 2019; CRS, 2020).

In the past decade, an increasing number of studies exploring the extent to which women's empowerment is associated with maternal or child health and nutrition has been conducted across LMIC contexts. A 2016 review of 67 studies reported positive associations between women's empowerment and a range of maternal and child health outcomes, including skilled attendance at birth, child mortality, and full child vaccination (Pratley, 2016). Most published study findings focusing on nutrition outcomes have been similarly positive: cross-sectional analyses of DHS data, and at least one randomized controlled trial, across diverse Sub-Saharan African contexts suggest positive associations between women's empowerment and maternal BMI, child linear growth, child diet diversity scores, child micronutrient status, and food security (Aziz et al., 2022; Christian et al., 2022; Bliznashka et al., 2021; Jones et al., 2019; Heckert et al., 2019).

However, the body of literature is not consistent. A 2019 review of 62 studies examining more than 1300 associations of various child nutrition outcomes found non-significant associations between women's empowerment and child stunting and wasting (Santoso et al., 2019). In South Asia, similarly inconclusive findings

were reported (Kunningham, 2015). The inconsistent definition and measurement of empowerment, which is a multi-dimensional and culturally specific construct with complex underlying dimensions, has been a challenge limiting the comparability of studies conducted to date, and one reason for mixed associations among some countries (Carlson et al., 2015; Komakech et al., 2021).

Overall, though, the underlying assumption that greater empowerment means more freedom from restrictive social norms and thus better access to social resources for improved nutrition is generally, but not fully, supported by the current body of literature. Thus, assessing the effectiveness of the gender-focused MFH activities, which are layered onto existing Care Groups and SILC Groups as part of Girma, on maternal and child nutrition indicators was important not only for this program evaluation but also for contributing to the global evidence base.

Layered program activities of Girma

This program evaluation was motivated by the desire to understand the effectiveness of the integration, sequencing, and layering of two sets of three intervention modalities described throughout this report as **I1** and **I2**. These modalities are described in more detail below.



Modality I1 (SILC + CARE). SILC Groups are one of several household-level economic strengthening interventions included in Girma, as it is a savings-led microfinance approach that aims to help participants from poor households better manage their existing resources and provide basic financial management skills. The methods used in SILC are derived and adapted from traditional, community-based rotating savings and credit associations. The SILC groups have sessions that focus on 1) setting financial goals, managing income and expenses, and creating budgets; 2) understanding the importance of savings and providing tools to help members save money; and 3) understanding how to manage debt and income.

SILC groups aim to help members increase savings, receive loans, increase access to interest-free credit, and invest in income-generating activities that can support the purchase of nutritious foods. SILC groups are composed of 15 – 25 members with a management committee composed of 7 elected members. Each SILC group is managed and owned by its members. All financial transactions are registered during weekly meetings. The SILC groups have three types of funds: a main or credit fund, a solidarity fund and a *sadaqa* fund. The *sadaqa* fund can be used by SILC members to save, borrow, and also receive assistance for emergencies and help communities in need.

Care Groups aim to improve maternal and child health and nutrition by involving women in education and counseling. Care Groups are led by trained lead mothers who disseminate nutrition education messages to primary caregivers of infants and young children under 5 years of age. Nutrition education messages span critical life stages for healthy growth and development, from infancy and childhood into adolescence and adulthood focused on pregnancy and lactation. Care Groups promote dietary diversity using a 4-Star Diet curriculum endorsed by the Niger Ministry of health and partners. Each ‘star’ represents a different food group comprised of locally available foods in Niger. It encourages a balanced consumption of those foods representing: Star 1) animal-sources, Star 2) legumes and grains, Star 3) fruits and vegetables, Star 4) cereals, roots, tubers. In Girma, the Care Groups deliver nutrition messages and conduct cooking demonstrations using materials that

were developed through a collaborative process between Girma's health team, local implementing partners, and the Niger Ministry of Health.



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Modality I2 (SILC + CARE + MFH). In addition to the SILC Groups and Care Groups, modality **I2** includes MFH activities. These activities are based on the CRS Strengthening Marriages and Relationships Through Communication and Planning Couples methodology ('SMART Couples'). To do so, MFH programming engaged husbands and wives (as married couples) who had infants and young children under 5 years of age to improve communication, more equitable household decision-making, and better marital relationships. Adapted specifically for Girma, MFH was the first time CRS had incorporated a household finance and nutrition module into the SMART Couples curriculum to promote women's involvement in the budgeting, purchasing, and consumption patterns of nutritious foods, as well as to complement the nutrition education activities delivered through Care Groups that focus on women's participation. While Care Groups deliver nutrition messages primarily to women, MFH activities were designed to also convey them to men.

Program evaluation aims

With this background, this program evaluation sought to assess the relative impact of two sets of intervention modalities on maternal and child dietary outcomes in Zinder region of rural Niger. This study also sought to understand process-related factors of implementation, including a focus on the layering and integration of MFH with SILC and CARE program activities.

- 1 To evaluate the effectiveness of layering SILC, CARE, and MFH on maternal and child dietary diversity.
- 2 To understand the program pathways through which SILC, CARE, and MFH activities may have affected maternal and child dietary diversity.
- 3 To understand the process-related factors that may have contributed to primary dietary outcomes.
- 4 To generate recommendations for improving/scaling this layered and integrated program approach.

Research Methods

Study design

This evaluation utilized a longitudinal, mixed-methods ‘embedded’ research design conducted between 2021 – 2023 (Creswell and Creswell, 2017). This study was originally designed to be a cluster-randomized, unblinded impact evaluation. However, randomization was lost due to early MFH rollout in 44 of the 83 selected study villages starting May 2021. Thus, program impact was evaluated using an 18-month, prospective, quasi-experimental design that included both an impact evaluation component and a process evaluation component.

Four qualitative methods were used to understand ‘why’ and ‘how’ the intervention activities may have impacted nutrition practices. Qualitative findings and the secondary analysis of program documents were used to triangulate quantitative findings and enhance them in an integrated, mixed-methods evaluation approach (Sandelowski, 2000).

The figure below is a Theory of Change that was adapted and simplified from an original version developed by Catholic Relief Services which guided program design and implementation. This Theory of Change version served as a framework from which data collection methods, instrument questions, sampling procedures, and analytic processes were developed. Doing so allowed for an evaluation of the program modalities based on expected pathways toward behavioral impact (Figure 1).

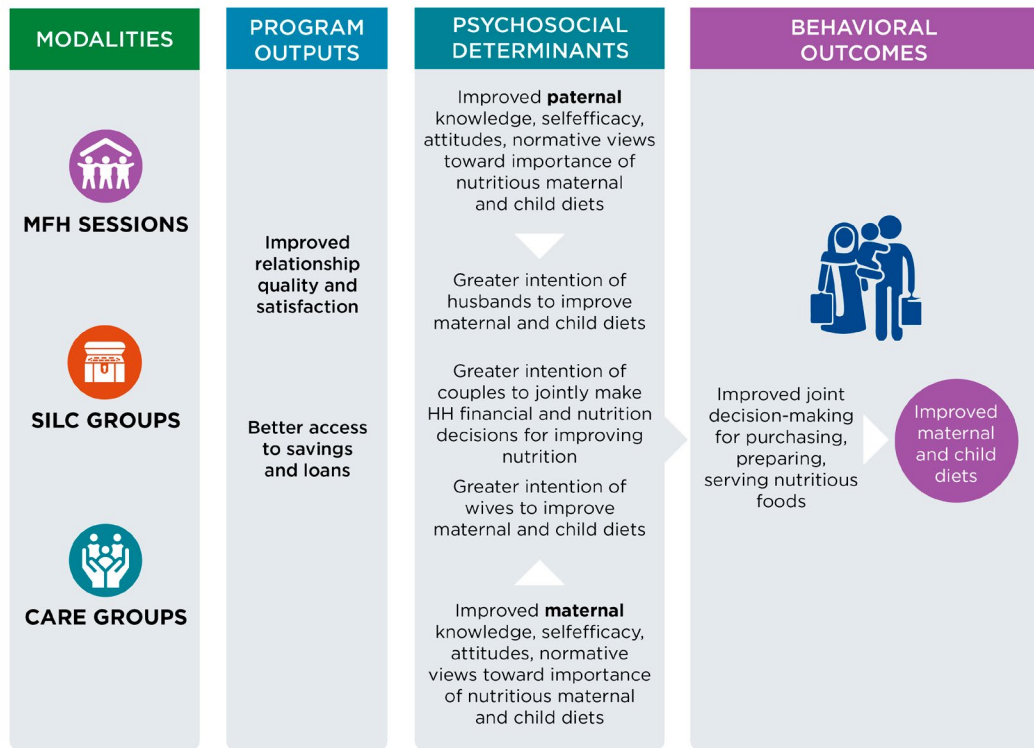


Figure 1. Adapted Theory of Change that framed program evaluation research methods

Data collection methods and sampling procedures

Survey methods training. Before the baseline data collection period, a virtual training of trainers of the University of Zinder senior researchers was conducted by the Pennsylvania State University in collaboration with Catholic Relief Services. Then, an in-person team training of 40 enumerators (20 male and 20 female) and five supervisors was conducted in Niger. The in-person training included a combination of didactic instruction, survey practice, and a field test. Enumerators reviewed the survey instrument questions, learned ethical considerations when conducting human subjects research, and practiced data collection using the *CommCare* mobile devices (Dimagi Inc, 2002). Training was also provided on gender concepts such as gender-based violence risks and other gender sensitivity topics relevant for fieldwork, by the Gender Lead for Girma. Finally, the data collection team spent one day in the field conducting a pilot test using the survey tool to conduct two mock interviews. A similar training process was followed both at baseline and endline.

Qualitative methods training. Before qualitative fieldwork, data collectors were recruited from the University of Zinder and trained by the research team over 7 days in Niger, including both classroom instruction and field-based practice. The trained team included 10 data collectors, comprised of 5 males and 5 females, and 2 supervisors from the University of Zinder.



Photo by Caroline Agalheir for CRS

Study sites

Survey data were collected at baseline (February, 2022 – March, 2022) and approximately 12 months later at endline (February, 2023 – March, 2023) throughout communes in three districts of Zinder region. Qualitative data collection occurred in the same communes from November – December 2022 from intervention (both **I1** and **I2**) participants in Dungass and Magaria districts, as well as from control households in the Mirriah district (Figure 2).

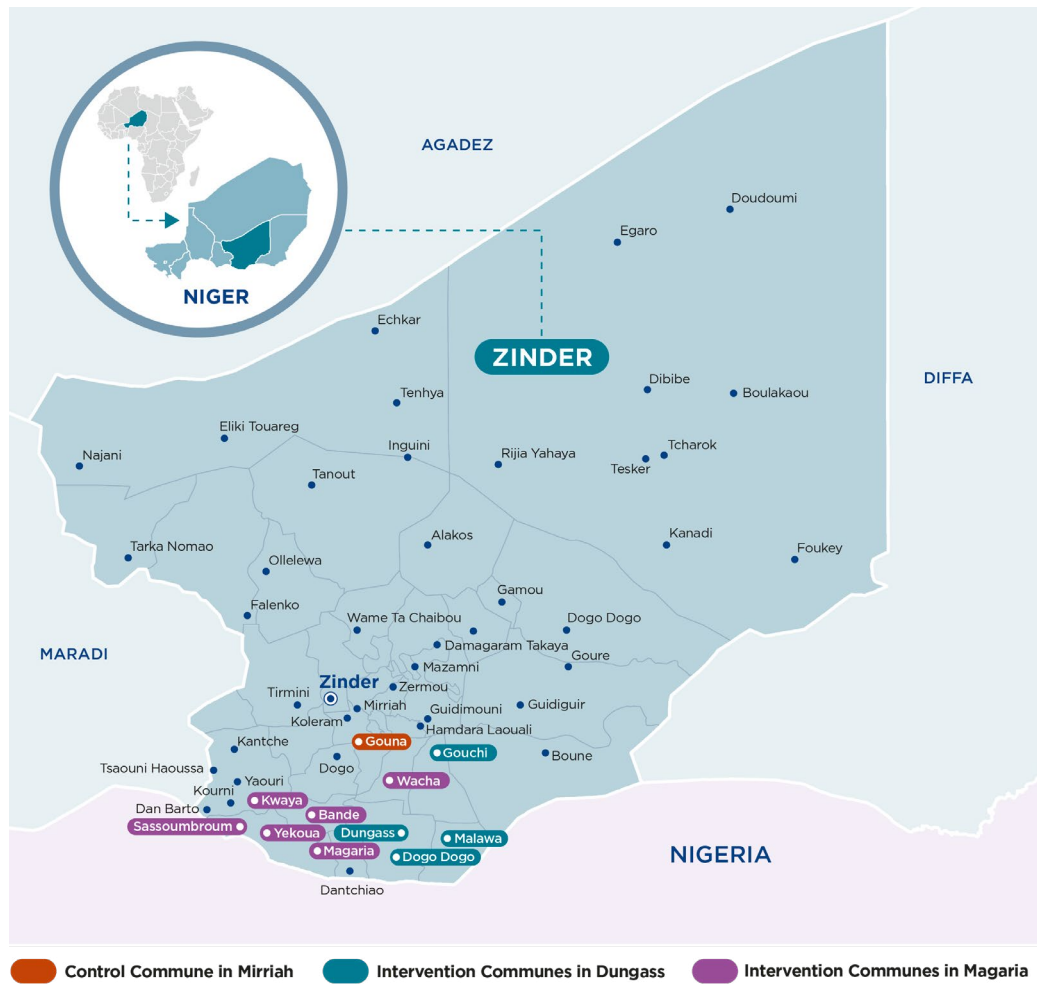







Figure 2. Intervention/program and control study sites in Zinder region, Niger

Data collection instruments

Specific data collection methods and related sampling procedures are described below.

- 1 **Impact evaluation survey tool.** The impact survey included four primary modules:
- 2 **Household module** included questions pertaining to household characteristics, household assets, and access to financial services.
- 3 **Paternal module** was designed for assessing paternal dietary practices, as well as underlying the psychosocial constructs related to maternal and child nutrition behaviors, microfinance, couple's relationship quality, program participation, program satisfaction, and women's input in household decisions.
- 4 **Maternal module** was designed for assessing maternal dietary practices, as well as underlying the psychosocial constructs specific to maternal and child nutrition behaviors, microfinance, couple's relationship quality, program participation, program satisfaction, and women's input in household decisions.
- 5 **Child module** was designed for male and female caregivers to report their child's dietary practices, as well as to assess underlying psychosocial constructs related to infant and young child feeding practices.

The psychosocial constructs in the Theory of Change depicted in [Figure 1](#) included maternal and paternal knowledge, self-efficacy, attitudes, normative views, and intention (Ajzen, 1991; Maibach & Murphy, 1995; Montano & Kasprzyk, 2015; O'Leary, 1985). Brief definitions of these constructs as they pertain to the expected outcomes specific to four behavioral domains including maternal diets, child diets, microfinance, and household decision-making are provided below:

-  **Knowledge:** level of understanding that mothers and fathers had toward a topic or engaging in a behavior.
-  **Self-efficacy:** level of maternal and paternal self-confidence to be able to successfully carry out a selected behavior.
-  **Attitude:** level of maternal and paternal mindset, outlook, and feelings (positive, neutral, negative) toward carrying out a behavior.
-  **Normative view:** the extent to which mothers and fathers believed others in their community will approve or disapprove of their own behavior.
-  **Intention:** reflects a desire, and to some extent having a plan, to carry out a behavior in the future.

The household and paternal modules were answered by the enrolled husband, while the maternal and child modules were answered by the enrolled wife of the household. In the case of each polygamous household, one wife was randomly selected for participation using the *CommCare* open-source mobile application that generated a randomized list of those eligible (Dimagi Inc, 2002). Two enumerators, one male and one female, were paired to administer the survey modules to each husband and wife in a couple separately. The survey questions were written in

French but posed to participants in Hausa during fieldwork. Responses were recorded again using French on electronic tablets equipped with *CommCare* (Dimagi Inc, 2002).



Semi-structured interviews. To help explain and contextualize program effects and implementation quality, qualitative interviews were conducted among multiple types of program stakeholders, including participating married couples (husbands and wives) and intervention implementers including MFH facilitators. Interviews were conducted on a one-on-one basis with each respondent using a semi-structured interview guide (Brinkmann, 2014; Kallio et al., 2016). Interviews were conducted in Hausa, recorded digitally, and then translated and transcribed into French for analysis.



Focus group discussions. Focus groups were conducted to explore participant experiences with and perspectives toward the layered Girma program activities (Morgan, 1996). Focus groups also provided data that contributed to our understanding of underlying social norms related to key behaviors of interest in this evaluation. Given the cultural context, focus groups were gender-specific with husbands participating in 7 groups and their wives in the other 7 groups separately. Data were conducted using a semi-structured guide, recorded digitally, and then transcribed and translated into French for analysis.



Meal observations were conducted in both program and control households where children under 5 years of age lived. Each observation lasted between 4 – 6 hours and recorded target behaviors related to breastfeeding, complementary feeding, meal preparation and feeding, hygiene, care, and the home environment. Observations were conducted using a semi-structured observation form on which the observers recorded behaviors of interest in real time and wrote detailed field notes using specific question prompts provided (Bernard, 2013; Harvey, 2018). To reduce the risk that observed household members would change their behaviors so much in the presence of observers as to obfuscate key findings, attempts were made to conduct unannounced household visits after the original recruitment period (Harvey, 2018; Kodish et al., 2022). Suspected reactive behaviors were recorded in the form of field notes by observers when they perceived behaviors atypical to those of Hausa households and interpreted with caution.



Direct observations of MFH sessions were conducted to understand dimensions of program fidelity and triangulated with other primary and secondary data sources, given the risk of reactivity during the presence of observers (Morse, 1991). Specifically, each observation aimed to assess the extent to which the MFH curriculum was followed and delivered by trained facilitators (Greene, 1994). Key behaviors of interest were recorded in French using a semi-structured observation form, including detailed field notes written by observers attending the sessions.



Free listing and pile sorting are anthropological methods used for understanding a cognitive domain specific to a particular cultural group. In this program evaluation, **free lists** were conducted among caregivers of children under 5 years to elucidate the most salient young child foods and illnesses in this setting. **Pile sorts** were then conducted among similar caregivers to explore local food classification systems and to assess risk perception toward common childhood illnesses (Weller & Romney, 1988).

Sampling procedures



Sample size calculation. A sample size of 2400 households (assuming unequal cluster sizes) was estimated to detect a 0.5-point difference in the dietary diversity score among mothers of children under 5 years and 0.5-point difference in maternal/child dietary diversity score. We assumed interclass correlation of 0.1, type 1 error of 0.05 and power of 0.8. A total of 2331 households were enrolled at baseline in our study.



Study arms (intervention) I1 and I2 sampling. In total, 779 households in 39 villages were enrolled in **I1** (SILC + CARE) and 1081 households in 44 villages were enrolled in **I2** (SILC + CARE + MFH) study arms. In both study arms, enumerator teams used a preexisting list of SILC participants to screen households for eligibility according to the following characteristics: 1) the husband or wife was a member of a SILC group, 2) at least one wife was aged 15 – 49 years with a child under the age of 5 years, 3) the household has lived in the village for at least 6 months and plans to stay for at least 6 more months, and 4) the husband lived with the family at least 6 months out of the year.



Control sampling. In total, 471 control households were enrolled in 20 villages. Villages were eligible if 1) they did not have the *Spotlight Initiative* (a program implemented by a partner non-government organization focused on improving women and girls' empowerment), and 2) if there were 50 or more households within the prospective village. Based on these criteria, 20 eligible villages were randomly selected among the 101 available options. Within the control villages, enumerator teams used a sketched map of the selected village, with the help of community leaders to locate and screen eligible households. From a chosen landmark on the village map, the enumerator teams then identified the number of roads leading away from the landmark.

Then, one road was selected at random and an enumerator walked down it to screen eligible households. After doing so, the enumerator team returned to the landmark and walked through the next identified road before then repeating this process until the sample size was met. In larger villages, once a household was selected, the enumerator turned to the left and moved 50 meters from that household to select another household. In compounds with multiple households, the interviewer screened all households for eligibility. Then 12 months later at endline, an identifying roster for every village was used to locate the same husband, wife, and child from baseline using the following information to ensure accurate follow-up: household ID, name of household head, name of wife, name of child, child age, and child sex.

Table 1. Summary of data collection methods, participant types, final analytic sample sizes

STUDY ARM	SAMPLE SIZES AND PARTICIPANT TYPES
IMPACT SURVEYS	
I1 (SILC + CARE)	655 households ¹
I2 (SILC + CARE + MFH)	910 households ¹
Control	409 households ¹
SEMI-STRUCTURED INTERVIEWS (N = 82)	
I1 (SILC + CARE)	24 interviews (12 wives; 12 husbands)
I2 (SILC + CARE + MFH)	24 interviews (12 wives; 12 husbands)
Control	24 interviews (12 wives; 12 husbands)
Other	10 interviews (MFH facilitators)
FOCUS GROUP DISCUSSIONS (N = 14)	
I1 (SILC + CARE)	7 focus groups (4 female; 3 male)
I2 (SILC + CARE + MFH)	7 focus groups (4 female; 3 male)
DIRECT OBSERVATIONS (N = 64)	
I2 (SILC + CARE + MFH)	16 child U5 meal observations
Control	16 child U5 meal observations
MFH sessions	32 MFH sessions
FREE LISTS AND PILE SORTS (CULTURAL DOMAIN ANALYSIS)	
I2 (SILC + CARE + MFH)	30 free lists of primary caregivers
I2 (SILC + CARE + MFH)	40 pile sorts of primary caregivers

¹ Final household survey sample sizes for analysis at endline

Data analysis

Statistical data analysis



Inclusion criteria and sample characteristics. Adult study participants with a child between the ages of 6 – 59 months at baseline, mothers between the ages of 15 – 49 years at baseline, and children whose age differences between 10 – 14 months from baseline to endline were included in the analytic sample for survey analysis. In addition, only those individuals with dietary diversity scores at both baseline and endline were included. A total of 1974 eligible households out of 2331 enrolled households (655 in I1, 910 in I2, and 409 in Control) were included in the analytic sample (84.7% of the total enrolled).

We conducted a descriptive analysis of baseline characteristics of households, mothers, fathers, and children by study arm. The Shapiro-Wilk test was used to test the normality of continuous variables. The chi-square tests were conducted to analyze categorical variables by study arm. The Wilcoxon rank-sum and the Kruskal-Wallis tests were used to statistically compare continuous variables between participants in different study arms. To compose a comprehensive household wealth index variable, the following method was used: Each wealth-related variable, including household condition, resources, and asset ownership was transformed into a binary variable as “yes” owned or “no” not owned. Wealth-related variables were excluded if a variable was uniformly reported (>95% yes, or >95% no). (Vyas and Kumaranayake, 2006). A household wealth index was calculated using principal components analysis (Hjelm et al., 2017). The first principal component captured 15.9% of the variance (maximal variation) and was retained for dividing the wealth index into quintiles (Filmer and Pritchett, 2001).

Dietary (primary) outcomes



Dietary diversity scores. The impact of the interventions on the dietary diversity scores of women and children was assessed using Difference-in-Difference estimates (DDE) by applying a multivariate linear regression technique (Dimick and Ryan, 2014). Women’s dietary diversity scores and child dietary diversity scores were calculated as the sum of food groups between 0 – 9 and 0 – 7 respectively (FAO, 2010; WHO, 2007; Diop et al., 2021). Any covariates that differed between study arms were adjusted for during analysis. We also adjusted for propensity score during DID analysis comparing I1 and I2, as the assignment to MFH intervention was not randomized.

A propensity score was calculated by using logistic regression to derive the probability of receiving the MFH intervention as a function of the following participant characteristics: maternal age, maternal education, maternal employment, currently pregnant, maternal age at birth of first child, total number of children (mother), paternal age, paternal education, paternal employment, polygamy, total number of children (father), total number of children under 5, child age, child sex, child birth order, and wealth quintile (Austin, 2011). Robust standard errors for the regression models were used to account for clustering at village level at which the interventions were rolled out. All analyses were considered statistically significant at $p < 0.05$.

We also conducted a sensitivity analysis restricting the sample to couples in **I1** where wife participated in CARE and either a husband or a wife in SILC, and couples in **I2** where wife participated in CARE, either husband or wife in SILC, and both husband

and wife in MFH. We estimated the impact of the interventions on the dietary diversity scores of women and children using DID analysis as detailed above (Dimick and Ryan, 2014).

Intermediate (secondary) outcomes



Psychosocial factors. To assess the extent to which psychosocial constructs underlying behavioral outcomes were attributable to intervention exposure, we used DID estimates from multivariate linear regression models comparing the change in psychosocial factors between study arms. Maternal and paternal knowledge (8 questions for maternal diet and microfinance each and 7 questions for child diet), attitude (4 questions), self-efficacy (4 questions), subjective norm (4 questions), and intention (1 question) were assessed in relation to behavioral outcomes specific to four domains including maternal diets, child diets, microfinance, and household decision-making. For each of these four domains, we calculated z-scores for both maternal and paternal psychosocial indicators using baseline mean values and standard deviations.



Household savings. Total household savings were assessed by one question “What is the total amount of your savings in the past year?” at both baseline and endline. We compared changes in household savings from baseline to endline relative to control during the past year using local currency (West African CFA franc).



Spending on food purchases. The proportion of household income spent on food purchases compared to the same time last year (spent a lot more, spent a little more, same amount, spent a little less, and spent a lot less) was only assessed in the endline survey. We created a binary variable for the proportion of household income spent on food purchases compared to the same time last year where “1” was coded as spending ‘a little’ or ‘a lot more’ money out of the total household income on food; “0” was coded as spending ‘the same’ or ‘a little’ or ‘a lot less’ money out of the total household income on food.



Joint decision making. Joint decision-making was assessed using a CRS custom indicator adapted from the Project-level women’s empowerment in Agriculture Index (Pro-WEAI), which has been tested and developed in by 13 agricultural development projects across contexts (IFPRI, 2023). Nine questions from the survey were used to create the women’s input in HH nutrition decisions score during this evaluation. The following point values were assigned to the responses for each of the questions: no input (1), small amount of input (2), medium amount of input (3), high amount of input (4), complete input (77). An average of the point value for the questions that the participants responded to was calculated, ranging between 1.0 and 4.0. Questions with “complete input,” “do not know,” or blank/no response were not included in the sum. A binary variable was also created for baseline and endline to calculate the proportion of women who report medium or high levels of input. Mean score of greater than or equals to 3 was assigned “1” indicating median and high input. Mean score of less than 3 was assigned “0” indicating low or no input. Based on this binary variable, we examined change in women’s input in HH nutrition decisions: remains low (0 at baseline to 0 at endline), high to low (1 at baseline to 0 at endline), low to high (0 at baseline to 1 at endline) and remains high (1 at baseline to 1 at endline).



Relationship quality. A relationship quality index (RQI) was calculated based on a validated relationship quality scale using 26 questions (Ruark, 2015). We used DDE from multivariate linear regressions to calculate a RQI ranging from 0 (lowest quality) to 100 (highest quality) to evaluate the program impact on relationship quality and satisfaction (Ruark, 2015).

Textual data analysis



Thematic analysis of interview and focus group discussion transcripts. Textual data from qualitative interviews and focus group discussions were managed and analyzed in French using Dedoose software (Dedoose v9.0.17, 2021). The analysis process followed several steps. First, codebooks were developed based on the outlines of the interview and focus group guides and uploaded into Dedoose. Second, codes and sub-codes were added as ‘tags’ to assign meaning to chunks of text across the transcripts. Third, coded content was extracted from the software to review and interpret looking for themes relevant to addressing the study aims. Fourth, themes were then stratified by study arm and participant type to understand findings by sampling unit. Finally, findings were compared to those generated from other primary and secondary methods in a form of analytic triangulation that gave us more confidence in our findings and improved the credibility of interpretations (Miles and Huberman, 1994).



Direct observations generated both numerical data in the form of behavioral counts (e.g., whether hand-washing was observed before a meal) and textual data that reflected field notes taken by observers to help explain observed behaviors in real-time. The numerical data were entered into an analytic data management framework in MS Excel comprised of the behavioral domains of interest, including dietary and hygiene practices from meal observations, as well as curricular topics covered during MFH sessions, for example. Simple descriptive statistics were then generated to quantify the extent to which target behaviors occurred during the observed meals and MFH sessions. Textual field notes taken during observational fieldwork were thematically analyzed during analysis and used for contextualizing observed behaviours and triangulating findings across other self-reported methods such as interviews and focus group discussions (Bernard, 2013; Bernard, 2017).

Cultural domain analysis

We conducted cultural domain analysis of free list and pile sort data using Anthropac software (Analytic Technologies, 2015). Anthropac is a program used in social science and anthropology to analyze data on cultural domains. The program helps collect and analyze structured qualitative and quantitative data including freelists and pilesorts. Its analytical tools include techniques that are unique to anthropology, such as consensus analysis, as well as standard multivariate tools such as cluster analysis and multidimensional scaling (Borgatti and Halgin, 2011).



Free List data: Smith’s *S* statistic (rank-order variable) was calculated and used to interpret free list data reflective of salient food and illness items in the Hausa cultural context. The two lists of salient foods and illness generated from free listing were used to create pile sort cards (Quinlan, 2005). Textual field notes taken during data collection were thematically analyzed by the research team and used for interpreting local food and illness terms.



Pile sort data: Multi-dimensional scaling was used to analyze pile sort data in Anthropac software, which provided a visual representation of similarity clusters among food and illness items (Weller and Romney, 1998). The maps provided a statistical representation of local classification systems, or consensus in the way that community members conceptualize young child foods and illnesses based on how similar and different they perceive those items to be to one another given specific question prompts asked during data collection. Textual field notes were reviewed thematically to explain the statistically generated categorizations.



Secondary data analysis. Secondary analysis of Girma program records and related documents was carried out to extract information used to triangulate findings generated from primary data collection methods (Newcomer et al., 2015). The secondary data set included records of program reach, information on implementation targets, annual reports, intervention curricular, and training manuals for implementors, and a range of technical reports offering contextual data (e.g., food price fluctuations) not otherwise available through primary data collection.

Ethics

This study was approved by The Pennsylvania State University Institutional Review Board and the National Ethical Committee of the Nigerien Ministry of Health prior to conducting research activities with human subjects. All adult participants provided their informed, verbal consent prior to participation.

Program Impact on Maternal, Child, and Paternal Diets



Maternal diets

- The dietary diversity scores of women (WDDS) increased in both SILC + CARE (I1) and SILC + CARE + MFH (I2) at endline, relative to those of control.
- Maternal knowledge (I2 only), self-efficacy (I1 and I2), and intention (I1 and I2) to consume a more diverse diet increased at endline; however, maternal attitudes (I1 and I2) worsened.
- Paternal (husband) knowledge (I1 and I2) and self-efficacy (I1 and I2) toward improving the diet diversity of their wives decreased at endline relative to control, with no change in other outcomes.



Child diets

- Although a treatment effect was not observed on child dietary diversity scores (CDDS), children consumed 0.14 more food groups in I2 vs I1 when using the 4-STAR Diet for measurement. The 4-STAR Diet formed the basis of the nutrition curriculum in both Care Groups and MFH sessions.
- Maternal self-efficacy and intention to improve the diets of their children increased in both I1 and I2 intervention arms, while maternal attitudes improved only in I2 relative to control. Both maternal and paternal knowledge of the importance of child diet diversity worsened at endline relative to control in both I1 and I2 study arms. Paternal attitudes did improve in I2, however.
- Limited financial means to purchase nutritious foods, a reliance on unpredictable agricultural, and market inaccess were the primary reasons ascribed to low maternal and child diet diversity.



Household savings and loans

- Husbands who participated in SILC groups reported typical median savings of \$0.21 in I1 and \$0.25 in I2 study arms each week, while participating wives reported \$0.33 in both I1 and I2.
- Normative views toward the importance of allocating household income for buying more diverse foods improved among SILC husbands (but not wives) in both I1 and I2, but participants explained that doing so in practice remained difficult.
- Greater than 80% of participants reported spending more household income for food purchases this year compared to last. Participants in I2 study arm had a 55% greater odds of spending more money out of total household income on food compared to those in I1.



Joint decision making

- Most interview respondents explained that MFH participation helped them improve their marital relationships through clearer communication, better decision making with fewer disputes, and improved understanding of one another. Survey findings corroborate these qualitative findings: both husbands and wives reported improved marital relationship quality in both I1 and I2.
- However, there was no observed intervention effect on the ability of wives to have more equitable inputs when making household decisions around nutrition at endline
- Culturally, heads of household (husbands) have most, if not all, decision-making power around household finances, health care, and food purchasing decisions in this context.

Household sample characteristics

Overall, 1,974 households participated in this program evaluation at both baseline and endline across the three study arms. All households were comprised of a married couple (husband and wife), including approximately one-third (36%) of those with polygamous marriage structures (husband and more than one wife). The households sampled in the control area were wealthier than those in both intervention study arms **I1** (SILC + CARE) and **I2** (SILC + CARE + MFH). Approximately 25% of **I2** households were categorized as 'poorer' or 'poorest' in comparison to just 10% (8.1% – 12.5%) of control households. A greater proportion of control households were also categorized as 'richer' or 'richest' than those in both **I1** and **I2** study arms (Table 2).

Table 2. Household demographic characteristics by study arm

	CONTROL	I1 (SILC + CARE)	I2 (SILC + CARE + MFH)
Household sample size (n)	409	655	910
Household wealth quintile^{a, b, c}, n (%)			
Poorest	51 (12.5)	128 (19.5)	216 (23.7)
Poorer	33 (8.1)	106 (16.2)	256 (28.1)
Middle	74 (18.1)	140 (21.4)	181 (19.9)
Richer	117 (28.6)	141 (21.5)	137 (15.1)
Richest	134 (32.8)	140 (21.4)	120 (13.2)

Chi-square tests were used to compare categorical variables and Wilcoxon rank-sum test and Kruskal-Wallis tests were used to compare continuous variables; ^a I2 vs I1 significant at $p < 0.05$, ^b I1 vs C significant at $p < 0.05$, ^c I2 vs C significant at $p < 0.05$; Differences among comparison groups were adjusted for during analysis, as described in the methods.

Maternal diets

Demographic characteristics. The mean age of the 1,974 women of reproductive age who were sampled across the three study arms ranged from 30 – 32 years, with older participants in both SILC + CARE (**I1**) and SILC + CARE + MFH (**I2**) relative to the control. Over 80% of all women sampled had no formal education, although more than 50% were employed in each study arm. Maternal age, age range (years), education levels, employment status, and life stage (pregnancy) significantly differed between at least two study arms ([Table 3](#)).

Table 3. Maternal (women of reproductive age) demographic characteristics by study arm

	CONTROL	I1 (SILC + CARE)	I2 (SILC + CARE + MFH)
Sample sizes of adult female participants by study arm (n)	409	655	910
Maternal age in years^{b, c}, mean +/- SD	30 +/- 6.9	31 +/- 7.5	32 +/- 8.1
Maternal age range (years)^c, n (%)			
15 - 25	133 (32.5)	193 (29.5)	263 (28.9)
26 - 35	198 (48.4)	301 (46.0)	380 (41.8)
>35	78 (19.1)	161 (24.6)	267 (29.3)
Maternal age at birth of first child in years, mean +/- SD	17 +/- 2.4	18 +/- 2.4	17 +/- 1.9
Education level^{a, b, c}, n (%)			
None	357 (87.3)	545 (83.2)	741 (81.4)
Primary	46 (11.2)	77 (11.8)	151 (16.6)
Secondary	6 (1.5)	33 (5.0)	18 (2.0)
Employment^{a, b}, n (%)			
Employed	274 (67.0)	359 (54.8)	639 (70.2)
Not employed	135 (33.0)	296 (45.2)	271 (29.8)
Number of children, mean +/- SD	4.6 +/- 2.2	4.6 +/- 2.0	4.7 +/- 2.2
Currently pregnant (yes)^a, n (%)	66 (16.4)	91 (14.1)	169 (18.9)

Chi-square tests were used to compare categorical variables and Wilcoxon rank-sum test and Kruskal-Wallis tests were used to compare continuous variables; ^a I2 vs I1 significant at $p < 0.05$, ^b I1 vs C significant at $p < 0.05$, ^c I2 vs C significant at $p < 0.05$; Differences among comparison groups were adjusted for during analysis, as described in the methods.

Dietary outcomes of women. The dietary diversity scores of all women in the sample increased in both SILC + CARE (I1) and SILC + CARE + MFH (I2) at endline, relative to those of control. Women's dietary diversity scores did not change from baseline 3.7 (\pm 1.3) to endline (3.7 \pm 1.2) among control participants, but did so among those in both I1 (2.9 (\pm 1.1) to 3.3 (\pm 1.1)) and I2 (2.9 (\pm 1.0) to 3.4 (\pm 1.0)) (Figure 3).

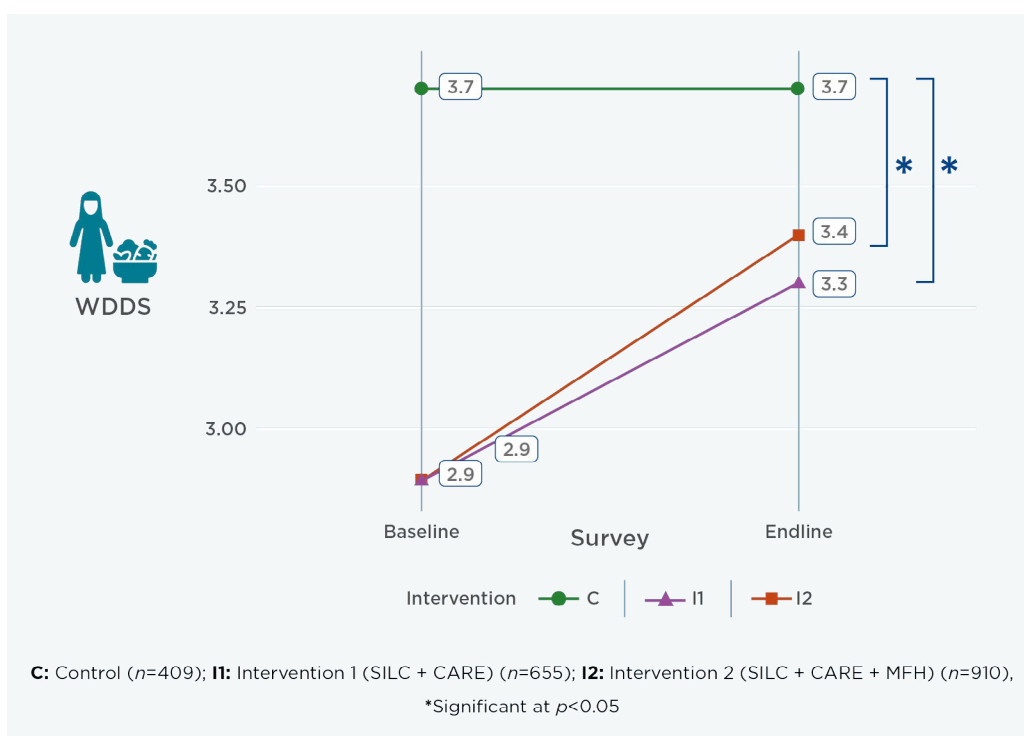


Figure 3. Difference-in-difference (DDE) impact estimates of WDDS by study arm and survey round

Compared to control participants at endline, WDDS increased 0.38 (95% CI: 0.18, 0.58) points with exposure to I1 (SILC + CARE) and 0.42 (95% CI: 0.25, 0.59) points with exposure to I2 (SILC + CARE + MFH). No significant differences were observed comparing I1 and I2 WDDS at endline (Table 4).

Table 4. Women’s dietary diversity scores comparing study arms at endline

STUDY ARMS	DIFFERENCE-IN-DIFFERENCE (DDE) IMPACT ESTIMATE	95% CONFIDENCE INTERVAL (CI)	P-VALUE
I1 v C ¹	0.38	(0.18, 0.58)	<0.001*
I2 v C ²	0.42	(0.25, 0.59)	<0.001*
I2 v I1 ³	0.04	(-0.15, 0.23)	0.690

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Factors influencing maternal diets. At endline, maternal intention (but not that of husbands) to consume a more diverse diet increased in both intervention **I1** (SILC + CARE) and **I2** (SILC + CARE + MFH) relative to the control (Table 5).

Table 5. Maternal (self) and paternal (husband) intention to improve maternal diet diversity

MATERNAL INTENTION				HUSBAND INTENTION			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1¹ vs C	0.30	(0.08, 0.52)	0.007*	I1¹ vs C	-0.23	(-0.53, 0.07)	0.138
I2² vs C	0.46	(0.27, 0.65)	<0.001*	I2² vs C	-0.21	(-0.43, 0.005)	0.055
I2³ vs I1	0.16	(-0.06, 0.38)	0.158	I2³ vs I1	0.02	(-0.25, 0.29)	0.896

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

In addition, maternal knowledge of diverse diets increased among MFH-enrolled women (I2) while maternal self-efficacy increased in both I1 and I2 study arms at endline, relative to control. Among I1 and I2 husbands, indicators of both knowledge and self-efficacy worsened at endline, however (Tables 6 - 7).

Table 6. Maternal (self) and paternal (husband) knowledge to provide more diverse foods to women

MATERNAL KNOWLEDGE				HUSBAND KNOWLEDGE			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1¹ vs C	0.17	(-0.01, 0.04)	0.066	I1¹ vs C	-0.49	(-0.74, -0.23)	<0.001*
I2² vs C	0.21	(0.04, 0.38)	0.013*	I2² vs C	-0.26	(-0.50, 0.02)	0.030*
I2³ vs I1	0.04	(-0.09, 0.17)	0.571	I2³ vs I1	0.22	(-0.07, 0.51)	0.132

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Table 7. Maternal (self) and paternal (husband) self-efficacy to provide more diverse foods to women

MATERNAL SELF-EFFICACY				HUSBAND SELF-EFFICACY			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	0.48	(0.23, 0.74)	<0.001*	I1 ¹ vs C	-0.81	(-1.16, -0.46)	<0.001*
I2 ² vs C	0.42	(0.18, 0.68)	<0.001*	I2 ² vs C	-0.79	(-1.06, -0.52)	<0.001*
I2 ³ vs I1	-0.06	(-0.30, 0.18)	0.641	I2 ³ vs I1	0.02	(-0.37, 0.40)	0.929

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

During qualitative interviews, women acknowledged that their typical diets are less than ideal due to real-life constraints associated with subsistence, agricultural livelihoods.

“ We are forced to eat this food because we have no other choice but to eat what is in front of us. Even if you want to eat quality food, you cannot. Because we do not have the money for it.”

— FEMALE INTERVIEW, SILC + CARE + MFH (I2)

Women expressed wishes to have diets with more diverse food items such as leafy greens, moringa, beans, pasta, vegetables, fruits, meat, fish, and oil, for instance. Husbands also openly described the **financial challenges** associated with providing more diverse diets for their families.

“ The challenge I face is the lack of employment. I don't have a job, if I did, I could provide them (household) with a nutritious diet. So we are forced to eat the usual foods I'm used to eating every day. I want to offer them oranges or other nutritious foods, but alas...”

— MALE INTERVIEW, SILC + CARE (I1)

“ The usual challenges I face when trying to provide my family with a nutritious diet are: lack of means; lack of work or income-generating activity; and lack of livestock. If I had at least one of these opportunities, nothing is going to stop me from guaranteeing them a nutritious diet...inshallah!”

— MALE INTERVIEW, SILC + CARE + MFH (I2)

Higher food prices. Personal accounts shared during interviews and focus group discussions underscored the reality of rural Niger where participants reported higher food costs relative to typical household incomes from the previous year: at endline data collection, 67% of program participants in SILC + CARE (**I1**) and 63% in SILC + CARE + MFH (**I2**) intervention arms reported experiencing higher food prices compared to 48% reporting so in control areas (Figure 4).

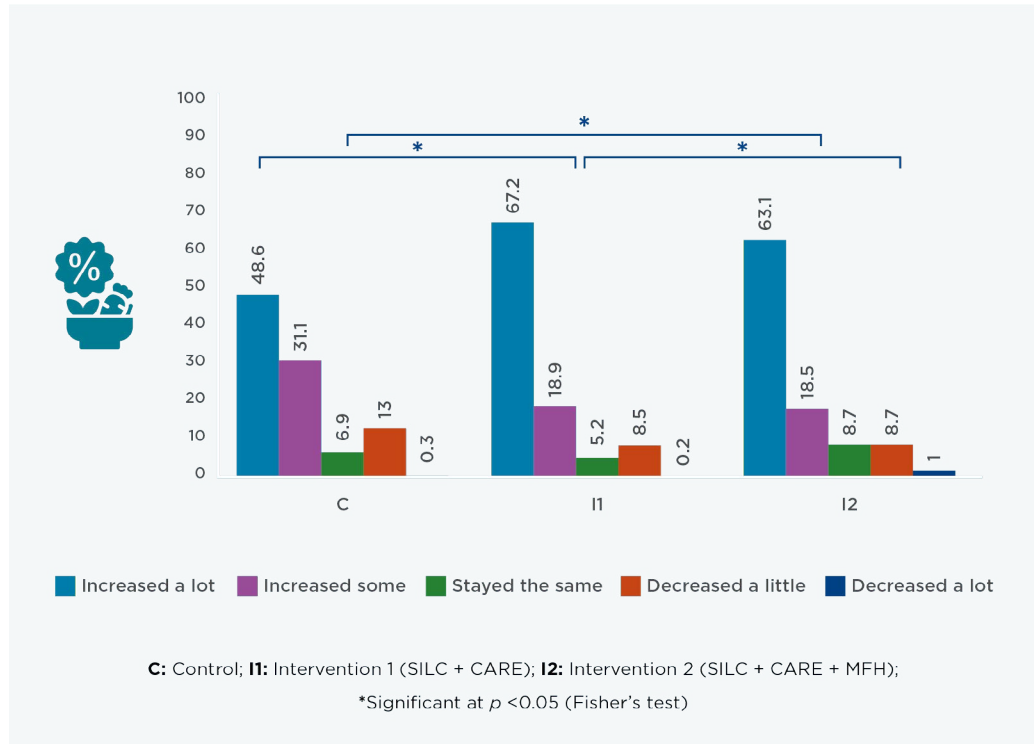


Figure 4. Reported food price changes by study arm at endline

During 2020 - 2022, which coincides with much of program implementation, 71.4% of the population was either moderately or severely food insecure ((FAO), n.d.). Regional insecurity-induced market disruptions in Niger, further aggravated by the ripple effects of the Ukraine war on international trade and commodity prices, negatively impacted food availability and access during that time (FAO, n.d.).

Niger was also experiencing unprecedented levels of food insecurity as a result of poor agricultural yields in 2021 and related challenges that continued through much of 2022. Between the baseline and endline periods of this evaluation, national cereal production was severely impacted by a combination of floods, pests, and conflicts. As a result, national grain prices increased by 10% from 2021 to 2022 (FAO, n.d.). In response to these challenges and to mitigate the escalating food prices, the Nigerien government and partners provided greater food assistance as well as subsidized cereal prices from February - September 2022.

In the Zinder region during 2022, the Ministry of Agriculture estimated that 17% of agricultural villages (598 villages; 707,432 people) did not have the production to meet community food needs. Specifically, retail-level prices of the most consumed cereal grains, millet and sorghum, started rising in early 2022 and reached a peak during May - July of that year (Figure 5).



Figure 5. Cereal price fluctuations in Zinder region (Nov. 2021 – Mar. 2023) (FAO, n.d.)

At their price peak in May 2022, both millet and sorghum had increased approximately 40% compared to December 2021 price averages. The 40% higher price levels persisted for much of 2022 during program implementation when greater food insecurity and reduced household purchasing power may have made achieving nutritious diets that were being promoted more difficult. The Zinder region performed better agriculturally than did other regions during this time, however, and was better than the national average (26%). Such challenges may help explain both the modest intervention effects on dietary outcomes of this evaluation, including both the dietary diversity scores of women and children at endline.

Persistent food insecurity challenges may also help explain why the attitudes and normative views of participating couples toward more diverse diets for women did not improve, or in some cases worsened, during the evaluation period ([Tables 8 – 9](#)).

Table 8. Maternal (self) and paternal (husband) attitudes toward providing more diverse foods to themselves (or their wives)

MATERNAL ATTITUDES				HUSBAND ATTITUDES			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.24	(-0.43, -0.05)	0.014*	I1 ¹ vs C	-0.12	(-0.28, 0.04)	0.149
I2 ² vs C	-0.20	(-0.35, -0.05)	0.009*	I2 ² vs C	0.04	(-0.12, 0.19)	0.625
I2 ³ vs I1	0.04	(-0.16, 0.24)	0.702	I2 ³ vs I1	0.16	(-0.03, 0.34)	0.093

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Table 9. Maternal (self) and paternal (husband) normative views toward providing more diverse foods to themselves (or their wives)

MATERNAL SUBJECTIVE NORM				HUSBAND SUBJECTIVE NORM			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.08	(-0.29, 0.14)	0.478	I1 ¹ vs C	0.14	(-0.11, 0.40)	0.273
I2 ² vs C	-0.09	(-0.27, 0.10)	0.369	I2 ² vs C	0.12	(-0.04, 0.29)	0.132
I2 ³ vs I1	-0.01	(-0.24, 0.23)	0.947	I2 ³ vs I1	-0.02	(-0.28, 0.24)	0.890

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Interview respondents explained that it is usual for men, in particular, to be without stable employment and for households to be without income-generating activities at any given time. Such circumstances make it more difficult for earners to consistently provide nutritious foods for their families in this setting, a situation described by both program and control participants.

“ The usual challenges encountered while trying to maintain a nutritious diet every day are related to lack of means. If the person does not have an income-generating activity, they can't get the nutritious food, even if they want to.”

— FEMALE INTERVIEW, CONTROL

Moreover, both intervention and control participants ascribed their dietary challenges to agricultural livelihoods which are reliant upon annual harvest yields that often vary from one season to the next.

Poorer yields, which were experienced nationwide in Niger during 2022, meant less income and lower purchasing power for households to buy foods that constitute nutritious diets.

“*The first challenges that prevent me from providing our household with a diet every day are that there is a lack of financial means, and the poor agricultural harvest linked to climate change and [seasonal] variations.*”

— MALE INTERVIEW, SILC + CARE (I1)

“*I do not have the financial means. We do not have a steady job. These days the harvest is getting worse and worse. In these circumstances it is very difficult to provide the family with a nutritious diet every day.*”

— MALE INTERVIEW, SILC + CARE + MFH (I2)

In the two districts where MFH was evaluated (Dungass and Magaria), as well as the control district (Mirriah), agricultural production differed. The communes in Mirriah (control) and Dungass (MFH) districts experienced a net agricultural production higher than the estimated food need of the population (Table 10).

Table 10. Millet, sorghum, maize, fonio, rice, and wheat balance by evaluation district in 2022

DISTRICT	EVALUATION AREA	POPULATION (APRIL, 2023)	ESTIMATED CONSUMPTION (TONN)	NET PRODUCTION (TONN)	BALANCE (TONN)	PRO-CAPITA SURPLUS (KG/PERSON)
Dungass	MFH	548,427	109,005	130,975	21,970	40
Magaria	MFH	895,392	177,968	176,859	-1,109	-1
Dungass + Magaria	MFH	1,443,819	286,973	307,834	20,861	14
Mirriah	Control	786,527	156,330	197,141	40,811	52

*Data extracted from table 24 of the 2022 Winter Crop Evaluation Report from the Ministry of Agriculture (République du Niger - Ministère de l'Agriculture - Secrétariat Général Direction des statistiques, 2023)

In Magaria district (MFH), production was lower. The harvest season in Magaria (MFH) did not yield enough cereal production to satisfy the food needs of its population during this time in 2022. Furthermore, the Mirriah district (control) had a higher pro-capita cereal surplus compared to both Dungass and Magaria (MFH), as well as higher than the combined pro-capita surplus of the two MFH districts together. This factor may have positively affected the purchasing power, food

security, and diets of the control participants in Mirriah district (control), when compared to MFH participants living in Dungass and Magaria districts.

Cultural food rules during pregnancy and lactation.

During qualitative data collection, we also explored whether cultural food rules may be limiting the diet diversity of women, particularly during pregnancy and lactation. Food prescriptions (remedies) and food proscriptions (taboos) have been found to influence dietary patterns, particularly during important life stages, in other settings globally.



Food proscriptions (taboos). Most respondents explained that pregnant and lactating women should avoid food additives, such as salt, chili peppers, sugar, and ‘arome’ (an MSG condiment), as they may lead to pre-eclampsia and/or constipation. Consumption of sugar was said to cause diarrhea in the breastfeeding child if eaten by the mother. In addition, participants explained that fermented foods such as curdled milk, as well as sour/acidic foods such as sorrel should not be eaten during pregnancy due to stomach ulcer risk.



Food prescriptions (remedies). Respondents explained that pregnant women should eat a variety of fruits such as bananas, oranges, guava, and watermelons, as well as vegetables including *liane*, moringa, tomatoes, onions, and other leafy greens such as those from the baobab tree. During pregnancy and lactation, rice with beans, as well as eggs, liver, meat and fish were also said to be important for maternal and child health, specifically to ‘make good blood’ and prevent iron-deficiency anemia.

Thus, while specific food rules were identified for pregnant and lactating women, they do not seem to explain any substantive effect on diet diversity scores. Qualitative data, overall, suggest that nutrition insecurity stemming from financial challenges and associated agricultural livelihoods are more salient barriers to achieving an optimal diet in this setting for women.



Photo by Hadjara Laouali Balla for CRS

Child diets



Demographic characteristics. Children in the three study arms ranged in age between 27 and 29 months on average, with an older sample in both intervention arms **I1** and **I2** (29 ± 15 months old in both) compared to those in control (27 ± 14 months old). The total sample of 1,887 children included a similar proportion of male to female children across study arms, as well as similar birth order (Table 11).

Table 11. Child demographic characteristics by study arm

	CONTROL	I1 (SILC + CARE)	I2 (SILC + CARE + MFH)
Sample sizes of child participants by study arm			
<i>n</i>	387	620	880
Age (months) ^{b, c} , mean +/- SD			
	27 +/- 14	29 +/- 15	29 +/- 15
Sex, <i>n</i> (%)			
Male	195 (50.4)	329 (53.1)	465 (52.8)
Female	192 (49.6)	291 (46.9)	415 (47.2)
Birth order ^c , <i>n</i> (%)			
1 st	16 (4.1)	37 (6.0)	67 (7.6)
2 nd - 4 th	141 (36.4)	198 (31.9)	249 (28.3)
>4 th	230 (59.4)	385 (62.1)	564 (64.1)

Chi-square tests were used to compare categorical variables and Wilcoxon rank-sum test and Kruskal-Wallis tests were used to compare continuous variables; ^a I2 vs I1 significant at $p < 0.05$, ^b I1 vs C significant at $p < 0.05$, ^c I2 vs C significant at $p < 0.05$; Differences among comparison groups were adjusted for during analysis, as described in the methods.



Child dietary outcomes. Two indicators of child dietary diversity were assessed in this evaluation. First, child diet quality was assessed using Child Dietary Diversity Scores (CDDS) as the primary dietary outcome measure at endline. A secondary measure to understand child diet quality was using the food groups promoted in the 4-STAR Diet which forms the basis of the nutrition education messages delivered in both the Care Group and MFH sessions in Niger. Findings related to both measures are described below.



CDDS. The CDDS among children aged 6 - 59 months did not differ between either intervention SILC + CARE (**I1**) and SILC + CARE + MFH (**I2**) study arms relative to control at endline. The CDDS increased from $3.2 (\pm 1.2)$ at baseline to $3.6 (\pm 1.0)$ at endline. In **I1**, the mean CDDS increased from $2.8 (\pm 1.1)$ to $3.2 (\pm 1.0)$ and in **I2** from $2.7 (\pm 1.1)$ to $3.2 (\pm 1.0)$ from baseline to endline ([Figure 6](#)).

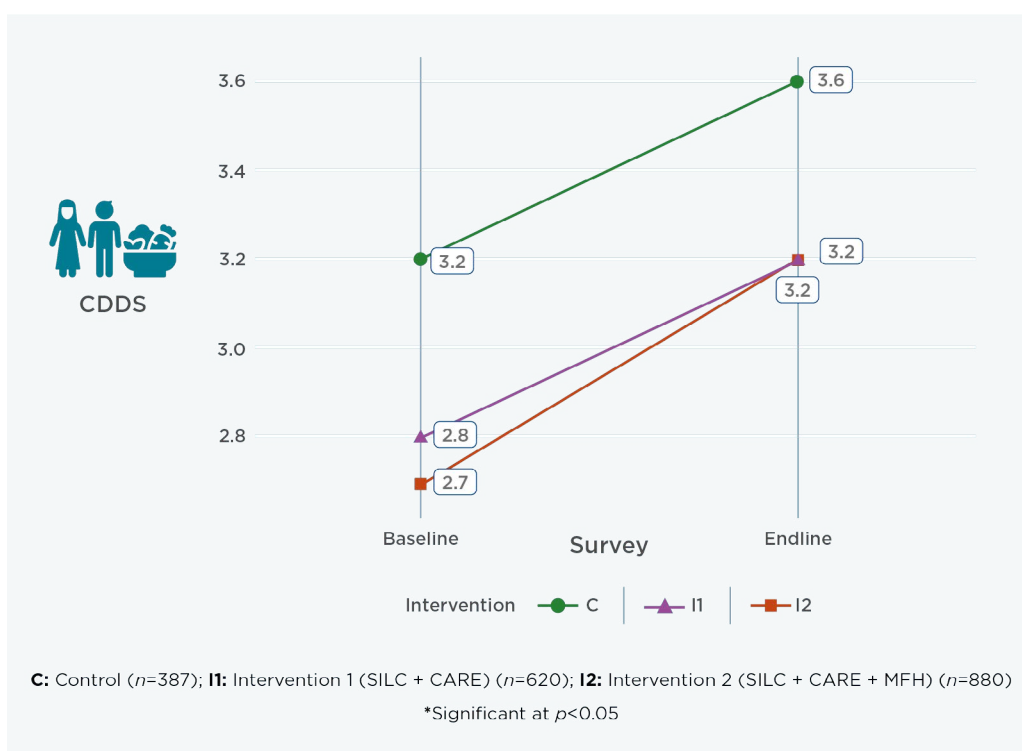


Figure 6. DDE impact estimates of child dietary diversity scores by intervention group and survey round

A significant treatment effect of **I1** or **I2** on CDDS comparing any two study arms was not observed at endline (Table 12).

Table 12. Child dietary diversity score estimates comparing study arms at endline

	DDE	(95% CI)	P-VALUE
I1 v C ¹	0.06	(-0.16, 0.28)	0.613
I2 v C ²	0.18	(-0.04, 0.40)	0.118
I2 v I1 ³	0.12	(-0.05, 0.29)	0.164

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile

3 Adjusted for propensity score

4-STAR Diet scores. When using the 4-STAR Diet as the basis for diet diversity scoring, there was an observed intervention effect of 0.14 (0.01, 0.28) more food groups consumed when comparing SILC + CARE + MFH (**I2**) to SILC + CARE (**I1**) interventions at endline (Figure 7).

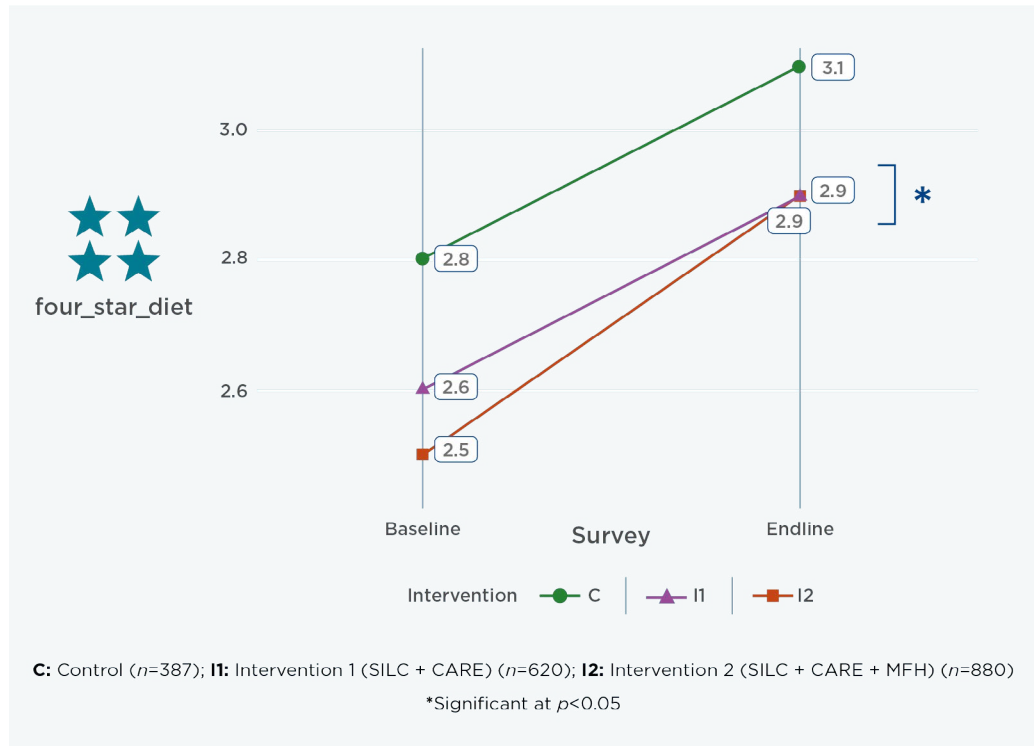


Figure 7. 4-STAR diet diversity scores by intervention arm at baseline and endline

There was an observed treatment effect of **I2** on 4-STAR diet diversity compared to that of **I1** vs **C** nor **I2** vs **C** (Table 13).

Table 13. Child 4-STAR diet score comparing study arms at endline

	DDE	(95% CI)	P-VALUE*
I1 v C¹	-0.03	(-0.19, 0.12)	0.680
I2 v C²	0.11	(-0.04, 0.26)	0.138
I2 v I1³	0.14	(0.01, 0.28)	0.035*

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile

3 Adjusted for propensity score

Factors influencing child diets. The following presentation of findings uses the primary measure of CDDS as the basis of assessing changes in psychosocial determinants of child diets. Although CDDS did not increase at endline, maternal intention to improve the diets of their children increased in both SILC + CARE (I1) and SILC + CARE + MFH (I2) intervention arms relative to control (Table 14).

Table 14. Caregiver intention to improve child diet diversity at endline

MATERNAL INTENTION				PATERNAL INTENTION			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	0.34	(0.12, 0.55)	0.002*	I1 ¹ vs C	-0.05	(-0.25, 0.15)	0.617
I2 ² vs C	0.40	(0.20, 0.60)	<0.001*	I2 ² vs C	-0.01	(-0.18, 0.15)	0.864
I2 ³ vs I1	0.06	(-0.16, 0.28)	0.600	I2 ³ vs I1	0.04	(-0.15, 0.22)	0.701

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Both male and female caregivers described three salient barriers limiting their intentions to provide more nutritious diets to their young children:

- 1 Limited financial means to purchase more nutritious foods
- 2 Seasonality that affects food availability, especially during the dry season in rural Niger
- 3 Far distances to the market selling nutritious foods

Respondents underscored their financial insecurity as a key challenge limiting their ability to feed their children diverse diets. Respondents generally referred to “nutritious foods” as those they cannot typically afford, especially in large family sizes where resource dilution may limit the amount of money available to feed everyone in a family optimally.

“*It's when the number of children increases and you don't have enough money.*”

— FEMALE INTERVIEW, SILC + CARE + MFH (I2)

Female caregivers described using their own income sometimes but most oftentimes having to rely on their husband's support to buy nutritious foods at the market, which may not always be accessible.

Most interviewed mothers mentioned the lack of food sources in their own village, forcing them to travel to markets in other communities to access a wider variety of nutritious food options. This distance not only requires extra time and effort but also increases the cost of obtaining nutritious foods due to the associated travel and time costs.

“ [The market is...] in another village nearby but far away because we do not have a market here...even if he needs to eat nutritious food, he cannot get it. We have to take a vehicle from the market or give money to someone who will take his motorcycle back to the neighboring village to get it and come back. Also, there is no one selling this food in our village. So...you can see the difficulty here.”

— FEMALE INTERVIEW, SILC + CARE + MFH (I2)



Photo by Francois Therrien for CRS

Those respondents who live closer to markets explained the relative ease of buying fresh fruits, vegetables, and other nutritious foods more regularly. Additionally, those respondents engaged in homestead food production of vegetables, legumes, and millet, for instance, indicated an easier time feeding their children more diverse diets during much of the year.

However, seasonality matters in rural Niger where food insecurity worsens during the dry season before the harvest period. Interview data suggest that during the dry season, every year, most households struggle with seasonal food insecurity that results in greater difficulty ensuring young children have optimal diets.

“*During the rainy season, it is easy to get food. After this period...nothing but patience [is needed].*”

— FEMALE INTERVIEW, SILC + CARE (I1)

“*...generally, it [food] is more available in the rainy season, and a little is available in the cold season too...so it is easy to get. After these periods, even our men will start migrating in search of something to feed their family.*”

— FEMALE INTERVIEW, SILC + CARE + MFH (I2)

Despite changes in the intentions of caregivers, household finances, far distances to markets, and seasonal food insecurity were reported as the primary challenges faced when trying to feed their children optimal diets year-round in rural Niger.

Despite these barriers, mothers (but not fathers) in both intervention arms (**I1** and **I2**) gained self-efficacy toward feeding their children more diverse diets relative to control. And both maternal and paternal attitudes toward the importance of diverse child diets improved among MFH participants (**I2** only) relative to control at endline ([Tables 15 - 16](#)).

Table 15. Caregiver self-efficacy toward improving child diet diversity at endline

MATERNAL SELF-EFFICACY				PATERNAL SELF-EFFICACY			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	0.52	(0.30, 0.72)	<0.001*	I1 ¹ vs C	-0.75	(-1.12, -0.38)	<0.001*
I2 ² vs C	0.43	(0.22, 0.64)	<0.001*	I2 ² vs C	-0.76	(-1.02, -0.50)	<0.001*
I2 ³ vs I1	-0.08	(-0.29, 0.13)	0.450	I2 ³ vs I1	-0.002	(-0.40, 0.40)	0.990

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Table 16. Caregiver attitudes toward improving child diet diversity at endline

MATERNAL ATTITUDES				PATERNAL ATTITUDES			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.28	(-0.46, -0.10)	0.002*	I1 ¹ vs C	-0.01	(-0.20, 0.19)	0.942
I2 ² vs C	0.31	(-0.47, -0.15)	<0.001*	I2 ² vs C	0.28	(0.12, 0.45)	<0.001*
I2 ³ vs I1	-0.03	(-0.23, 0.17)	0.767	I2 ³ vs I1	0.29	(0.09, 0.49)	0.004*

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

In addition to the barriers identified during qualitative interviews described above, we did not observe an intervention effect on the normative views of caregivers toward the importance of diverse child diets (subjective norm), which may have further limited the behavior change needed for significant child diet score improvements ([Table 17](#)).

Table 17. Normative views of caregivers toward improving child diet diversity at endline

MATERNAL SUBJECTIVE NORM ¹				PATERNAL SUBJECTIVE NORM			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.05	(-0.25, 0.15)	0.639	I1 ¹ vs C	0.19	(-0.06, 0.45)	0.143
I2 ² vs C	-0.11	(-0.28, 0.06)	0.196	I2 ² vs C	0.12	(-0.05, 0.28)	0.163
I2 ³ vs I1	-0.06	(-0.27, 0.15)	0.555	I2 ³ vs I1	-0.08	(-0.34, 0.19)	0.580

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Although both CARE and MFH program activities included nutrition education components, both maternal nor paternal knowledge (I1 and I2) of child nutrition worsened at endline relative to control (Table 18).

Table 18. Parental knowledge toward improving child diet diversity at endline

MATERNAL KNOWLEDGE				PATERNAL KNOWLEDGE			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.54	(-0.72, -0.35)	<0.001*	I1 ¹ vs C	-0.16	(-0.30, -0.01)	0.032*
I2 ² vs C	-0.51	(-0.68, -0.34)	<0.001*	I2 ² vs C	-0.14	(-0.27, -0.005)	0.042*
I2 ³ vs I1	0.03	(-0.13, 0.19)	0.714	I2 ³ vs I1	0.02	(-0.13, 0.17)	0.827

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

The delayed roll-out of the nutrition module within the MFH (I2) sessions may have limited MFH participant (especially fathers who had not participated in the Care Groups) exposure to key nutrition messages that were assessed at endline (see process findings chapter). While implementation timing matters, participant knowledge levels may not have been the primary factor limiting caregivers from feeding children optimally in this setting. Caregivers demonstrated generally adequate knowledge when asked to categorize commonly-eaten foods into categories based on how nutritious they believed each to be for young children.

The cluster analysis below illustrates consensus among caregiver perceptions of the nutrient adequacy of common young child foods. Caregivers classified green-leafy vegetables, fruits, and animal-source foods as **most nutritious** [pink cluster] relative to energy-dense, but nutrient-poor alternatives such as rice, beans, and millet considered **somewhat** [purple cluster] or **less nutritious** [blue cluster]. (Figure 8).

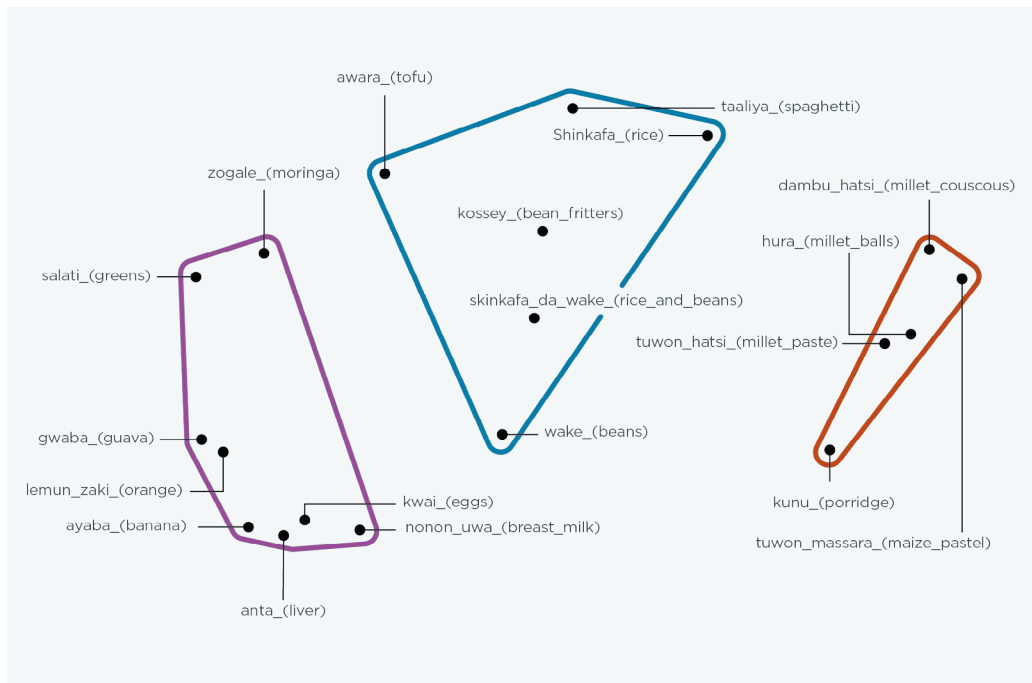


Figure 8. Perceived nutrient adequacy of individual child food items based on consensus analysis

Participants explained that the foods they categorized as **most nutritious** [orange cluster], such as liver and eggs, are good for child growth, disease prevention, rich in vitamins, and comparable to infant formula quality.

“ I think these foods are the most nutritious for children because they’re very rich in vitamins.”

“ I think these foods are the most nutritious for children because they are foods that hinder disease, that prevent the existence of disease in children.”

Among those staple foods classified as **somewhat** [blue cluster] or **less nutritious** [black cluster] for children, including millet, maize, rice, and beans, caregivers explained that they represent only what is available to eat to prevent hunger.

“ I think these foods are less nutritious for children because they are foods that are most available in our homes but that we eat without having a choice.”

“ These foods why we eat them to fill our bellies but which don’t have so many vitamins.”

Participant knowledge was likely not the primary reason why child diet diversity scores did not change, but instead a result of upstream factors related to high levels of household food insecurity during 2022.

Household savings and loans

The SILC intervention aimed to strengthen the economic situation of households with primary aims of increased household savings, a change in the proportion of income spent on food purchases, and an improvement in caregiver intention to allocate money for nutritious food for the family when creating a budget. In the endline survey, SILC participants reported the typical amount of money they saved from SILC activities in a week. While all SILC members are expected to save earnings, each SILC group decides on an individual minimum and maximum savings amount as part of the program activity. Husbands reported typical median savings of \$0.21 [\$0.17, \$0.46] in **I1** and \$0.25 [\$0.17, \$0.39] USD in **I2** study arms. Participating wives reported slightly greater usual savings of \$0.33 [\$0.17, \$0.42] in **I1** and \$0.33 [\$0.17, \$0.84] USD in **I2** study arms each week (Table 19).

Table 19. Median and interquartile range of reported typical weekly savings (USD) among husband and wives from SILC activities²

STUDY ARM	HUSBANDS (N)	MEDIAN [IQR]**	WIVES (N)	MEDIAN [IQR]**
I1	111	\$0.21 [\$0.17, \$0.46]*	85	\$0.33 [\$0.17, \$0.42]*
I2	148	\$0.25 [\$0.17, \$0.39]*	206	\$0.33 [\$0.17, \$0.84]*

The reported weekly savings fell within what was an expected range (\$0.063, \$0.63), according to CRS, given the nature of SILC activities in Niger as well as previous experiences with similar savings groups in other CRS programs globally. During interviews, respondents indicated that SILC encouraged them to engage in income-generating activities, such as small business ventures (e.g., peanut oil production) related to trading and agriculture.

“ We learned how to save money and how to do income-generating activities. We also learned how to trade for income. So, thanks to SILC activities, people can borrow money to do business or meet their needs. Afterwards, the person repays the loan within a set period of time...You can buy a goat to raise...then sell it to meet your needs.”

— FEMALE INTERVIEW, SILC + CARE + MFH (I2)

In addition, interview participants explained that SILC has led to increased economic empowerment and financial independence that has had a net positive effect on their households and communities at large.

² Outliers are removed. Outliers are defined as the values greater than 1.5 times the 75th percentile of the original distribution. *Significant at p = 0.05 level when comparing the median savings against zero USD using the one-sample Wilcoxon test. **Values reported in USD equivalent of local currency.

“ SILC has enabled many people to be held in higher regard within our community. In fact, thanks to SILC, they have a fund that has enabled them to do business and build relationships with many people.”

— MALE FOCUS GROUP, SILC + CARE + MFH (I2)

Normative views toward the importance of allocating household income specifically for buying more nutritious foods did improve among participating SILC husbands (but not wives) in both intervention groups I1 and I2 relative to control at endline (Table 20).

Table 20. Normative views of caregivers toward allocating money for nutritious food purchasing

MATERNAL SUBJECTIVE NORM				PATERNAL SUBJECTIVE NORM			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.15	(-0.41, 0.10)	0.247	I1 ¹ vs C	0.44	(0.26, 0.66)	<0.001*
I2² vs C	-0.23	(-0.45, -0.01)	0.04*	I2² vs C	0.35	(0.20, 0.49)	<0.001*
I23 vs I1	-0.08	(-0.37, 0.21)	0.608	I2 ³ vs I1	-0.09	(-0.33, 0.14)	0.436

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Qualitative data suggest that overall, community-level attitudes toward taking loans improved. Respondents described having improved access to loans, which has enabled them to better face financial difficulties or address pressing household needs, through SILC participation.

“ With SILC, I can take out a loan if I need one. This means that I do not have to go and get a loan from someone who might be bothered by me. Really, thank God! That’s an important change.”

— MALE INTERVIEW, SILC + CARE (I1)

“Initially, the men were asked to take two measures of millet each. During the rainy season, when food is in short supply, we open this store and sell it to SILC members at a moderate price. With the millet money we bought animals. Last year we stocked two bags per person and this year four bags. You see, we’ve had a lot of advantages.”

— FEMALE INTERVIEW, SILC + CARE (I1)

Just as normative views toward the importance of spending household income on nutritious foods increased in both intervention arms, so too did maternal and paternal intention (MFH participants (I2) only) to actually allocate money for nutritious food the next time that they make a budget (Table 21).

Table 21. Intention of couples to allocate money for nutritious food purchasing during budgeting

MATERNAL INTENTION				PATERNAL INTENTION			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	0.18	(-0.07, 0.43)	0.155	I1 ¹ vs C	-0.23	(-0.43, -0.02)	0.028*
I2² vs C	0.26	(0.06, 0.45)	0.010*	I2 ² vs C	-0.05	(-0.23, 0.13)	0.568
I2 ³ vs I1	0.08	(-0.18, 0.33)	0.547	I2³ vs I1	0.18	(-0.0001, 0.35)	0.050*

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

The modest intervention effect on caregiver intention to spend income differently may be, in part, because more than 80% of participants in both intervention (I1 and I2) and control groups reported spending a greater proportion of their total household income for any household food purchases this year compared to last year.

In fact, participants in SILC + CARE + MFH (I2) had a 55% (OR: 1.55 (1.05, 2.28)) greater odds of spending more money out of their total household income on food purchases compared to those in SILC + CARE (I1), suggesting the possibility of greater financial vulnerability among MFH households (Figure 9).

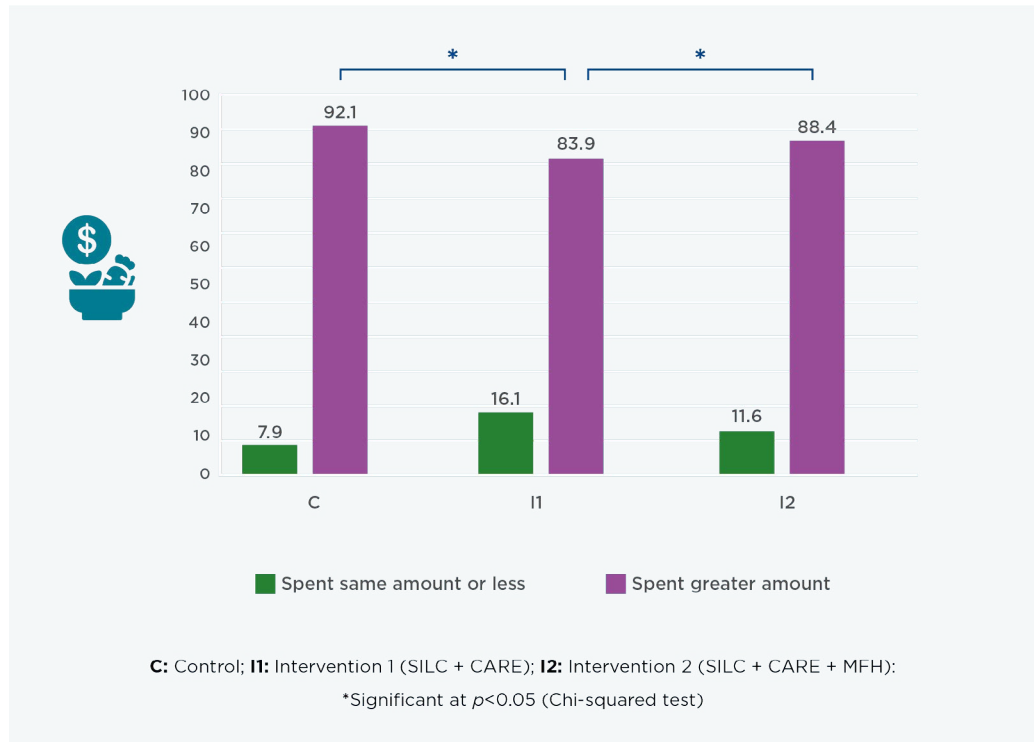


Figure 9. Proportion of household income spent on food purchases compared to the same time last year

Qualitative data corroborate these findings: interview and focus group participants in both intervention areas (**I1** and **I2**) indicated that after attending Girma activities they consider themselves better equipped to provide more diverse foods for their children compared to their situation beforehand, thanks to perceived improved financial management, increased income from small business activities, and increased nutrition knowledge. They also described their intention to change their food purchasing habits, focusing on buying more nutritious and locally-available foods, such as fruits, vegetables, and animal-based foods, whenever they have the money to do so; however, financial limitations persisted during 2022 especially.

“ Yes, SILC has helped improve the diet of my wife and child. Because I run a business with the loan I took from SILC, and this business enables me to provide good quality food for my family.”

— MALE INTERVIEW, SILC + CARE + MFH (**I2**)

During qualitative data collection, only a few MFH husbands (**I2**) reported having a budgeting plan in place to either guide their daily household activities or for unexpected expenses that may arise (e.g., health-related problems).

“No, we do not have a financial budget to guide the activities within our household. Because the money we earn, we do not earn it monthly, and not weekly or [even] bi-weekly. We [only] earn this money from time to time...”

— MALE INTERVIEW, SILC + CARE + MFH (I2)

Most participants explained that their financial situation is day-to-day and thus difficult to budget. Budgeting challenges, in part, may help explain why parental confidence levels to allocate money to nutritious food purchasing did not change or worsened (for fathers) since baseline ([Table 22](#)).



Photo by Hadjara Laouali Balla for CRS

Table 22. Couple's self-efficacy to allocate money for nutritious food purchasing during budgeting

MATERNAL SELF-EFFICACY				PATERNAL SELF-EFFICACY			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	0.03	(-0.23, 0.30)	0.793	I1¹ vs C	-0.41	(-0.68, -0.14)	0.003*
I2 ² vs C	0.08	(-0.15, 0.31)	0.489	I2² vs C	-0.38	(-0.58, -0.18)	<0.001*
I2 ³ vs I1	0.05	(-0.23, 0.32)	0.739	I2 ³ vs I1	0.03	(-0.27, 0.34)	0.837

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Parental knowledge and attitudes toward the importance of allocating money for nutritious food purchasing when making a budget also did not change from baseline to endline (relative to control) (Tables 23 - [24](#)).

Table 23. Couple's knowledge toward budgeting for nutritious food purchasing

MATERNAL KNOWLEDGE				PATERNAL KNOWLEDGE			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.004	(-0.22, 0.22)	0.972	I1¹ vs C	-0.28	(-0.46, -0.09)	0.003*
I2 ² vs C	-0.02	(-0.24, 0.19)	0.830	I2 ² vs C	-0.08	(-0.26, 0.09)	0.332
I2 ³ vs I1	-0.02	(-0.22, 0.18)	0.846	I2 ³ vs I1	0.20	(-0.02, 0.41)	0.075

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Table 24. Couple's attitudes toward budgeting for nutritious food purchasing

MATERNAL ATTITUDES				PATERNAL ATTITUDES			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.20	(-0.45, 0.06)	0.132	I1 ¹ vs C	0.00	(-0.21, 0.21)	0.987
I2 ² vs C	-0.08	(-0.30, 0.14)	0.472	I2 ² vs C	0.05	(-0.14, 0.25)	0.599
I2 ³ vs I1	0.11	(-0.14, 0.37)	0.390	I2 ³ vs I1	0.05	(-0.18, 0.28)	0.663

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

However, positive accounts emerged from the qualitative interviews and focus group discussions regarding their participation in the SILC and MFH program activities. For example, SILC and MFH respondents explained that their participation indeed helped them better understand financial management and household budgeting, generally.

“The most useful thing we've learned is budgeting, which is a very important factor on many levels in our day-to-day activities.”

— FEMALE INTERVIEW, SILC + CARE + MFH (I2)

“My participation in SILC activities was really beneficial for me and for my whole household, because I learned a lot, especially about financial management of the family budget, and how to plan spending while avoiding waste.”

— MALE INTERVIEW, SILC + CARE + MFH (I2)

SILC participants also reported their greater engagement in new income-generating activities, such as small businesses (e.g., peanut oil production) and agricultural activities thanks to SILC participation.

“We have learned a lot of lessons with SILC. You see, we recently made a payment into SILC. We can use this money to buy bags of peanuts, which we'll store until the market price rises, then take out and sell. You see, it is already a plus for us, whatever the profit we make. And when there's a need from an individual or the community, we take that money to meet that need.”

— MALE FOCUS GROUP, SILC + CARE (I1)

SILC participants explained that they experienced improved financial support thanks to loans offered during difficult times, such as the winter season when money was needed for food and chemical fertilizers. They pointed to the ‘interest-free’ nature of the SILC loans as important for improving their businesses, buying food, and participating in cultural ceremonies that require expenses.

Overall, participants explained that the loans have allowed them to engage in better financial planning, make better investments in their small businesses, and generate savings for new community projects.

Joint decision-making

The MFH intervention also aimed to improve couple’s communication and ensure a more equitable voice for women in household decision-making around issues of finance and nutrition. Most interview respondents explained that MFH participation has helped them improve their marital relationships through clearer communication, better decision making with fewer disputes and misunderstandings, and improved understanding of one another.

“*The MFH taught us to live well in harmony with my wives by prioritizing communication and especially decision making between couples. Communication is essential in married life. It is the nourishing sap of married life.*”

— MALE INTERVIEW, SILC + CARE + MFH (I2)

Survey findings corroborate these qualitative findings: both husbands and wives reported improved marital relationship quality in both **I1** and **I2** intervention arms relative to control at endline (Table 25).

Table 25. Couples relationship quality index scores by participant gender and study arm

HUSBAND RELATIONSHIP QUALITY				WIFE RELATIONSHIP QUALITY			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	6.09	(1.64, 10.55)	0.007*	I1 ¹ vs C	5.89	(2.92, 8.86)	<0.001*
I2 ² vs C	5.56	(2.08, 9.04)	0.002*	I2 ² vs C	6.17	(3.90, 8.44)	<0.001*
I2 ³ vs I1	-0.53	(-5.08, 4.02)	0.819	I2 ³ vs I1	0.28	(-2.83, 3.39)	0.860

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Several interview and focus group participants explicitly discussed the connection between relationship quality and joint decision making that was addressed during MFH sessions.

“...we have been taught to consult and communicate with our wives. We have seen a photographic illustration of two houses: the first is a house in which there is no joint decision-making, and the consequences are negative within the household; and the second, a house in which decision-making and communication are joint, which results in a harmonious house. So, it is imperative to involve the woman in decision-making so that there is a harmonious life within the household.”

— MALE FOCUS GROUP, SILC + CARE + MFH (I2)

Husbands, more so than wives, explained that women now take a more active role in household decisions around food purchasing, budgeting, and animal husbandry after participating in MFH sessions.

“Indeed, these interventions have improved joint decision-making. To even come to the MFH session, we come as a couple. We make decisions together about food purchases.”

— MALE FOCUS GROUP, SILC + CARE + MFH (I2)

“The combination of SILC groups, Care groups and MFH has brought about changes in budgeting and nutrition. These activities have enabled us to make decisions together. At first, it was only the husband who decided on budgeting. But now, the wife gives her point of view and the husband works with it.”

— FEMALE INTERVIEW, SILC + CARE + MFH (I2)

Despite these qualitative accounts suggesting that joint decision making improved for many MFH couples, we did not observe an intervention **11** or **12** treatment effect on the ability of wives to have more equitable inputs when making household decisions around nutrition at endline ([Table 26](#)).

Table 26. Women’s level of input into household nutrition decisions comparing study arms at endline

STUDY ARM	DDE	(95% CI)	P-VALUE
I1 ¹ vs C	0.12	(-0.07, 0.30)	0.212
I2 ² vs C	0.07	(-0.05, 0.19)	0.247
I2 ³ vs I1	-0.05	(-0.23, 0.13)	0.608

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

And participant intention to jointly make nutrition-related decisions also did not increase in either intervention group relative to control at endline (Table 27).

Table 27. Intention of wives and husbands to jointly make nutrition-related decisions

WIFE INTENTION				HUSBAND INTENTION			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	0.06	(-0.18, 0.30)	0.631	I1 ¹ vs C	0.00	(-0.18, 0.18)	0.974
I2 ² vs C	0.16	(-0.02, 0.34)	0.084	I2 ² vs C	0.12	(-0.04, 0.29)	0.140
I2 ³ vs I1	0.10	(-0.14, 0.34)	0.414	I2 ³ vs I1	0.12	(-0.06, 0.30)	0.189

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Qualitative data from interviews and focus group discussions provide a mixed set of participant experiences related to household decision making. Some husbands and wives recalled decision making-related changes from MFH participation while the majority underscored the strong gender roles that persist in this cultural context.

“ I cannot make any decisions without my husband's permission because we are his responsibility. I am afraid to break the law. Because if we make decisions without the husband, he can summon us to our parents. They will not be happy because they think it is unfair for the wife to decide without asking her husband's permission.”

— FEMALE (WIFE) INTERVIEW, SILC + CARE + MFH (I2)

“ Yes, of course I have an influence in the decision making in our household. Because, it is very difficult for my wife to disagree with me when I make a decision.”

— MALE (HUSBAND) INTERVIEW, SILC + CARE + MFH (I2)

Overall, qualitative data indicate that the head of the household (husband) has most, if not all, decision-making power when it comes to household finances, maternal and child health care, and food purchasing decisions in this culturally conservative setting.

“ It is always the husband who makes decisions about the quantity and types of food to buy, but sometimes we give our contribution if the head of the household is absent or does not have the means.”

— FEMALE (WIFE) INTERVIEW, SILC + CARE + MFH (I2)

Interview narratives explained that during times when men may be absent for any period of time, such as migration for work, women are culturally permitted to give their opinions and make decisions in his absence. Despite these strict gender roles that are socially and culturally-bound, survey data suggest that the attitudes and normative views of participating MFH husbands toward joint nutrition decision making increased at endline relative to control (Tables 28 - 29).

Table 28. Couple’s self-efficacy toward joint nutrition decision making

WIFE SELF-EFFICACY				HUSBAND SELF-EFFICACY			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	0.18	(-0.05, 0.40)	0.132	I1 ¹ vs C	0.06	(-0.13, 0.26)	0.534
I2² vs C	0.21	(0.01, 0.41)	0.041*	I2 ² vs C	-0.02	(-0.23, 0.19)	0.879
I2 ³ vs I1	0.03	(-0.19, 0.26)	0.775	I2 ³ vs I1	-0.08	(-0.31, 0.15)	0.058

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Table 29. Couple's attitudes toward joint nutrition decision making

WIFE ATTITUDES				HUSBAND ATTITUDES			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.29	(-0.49, -0.09)	0.005*	I1 ¹ vs C	0.14	(-0.05, 0.33)	0.143
I2 ² vs C	-0.20	(-0.37, -0.02)	0.030*	I2 ² vs C	0.24	(0.06, 0.41)	0.009*
I2 ³ vs I1	0.09	(-0.11, 0.30)	0.369	I2 ³ vs I1	0.10	(-0.09, 0.29)	0.313

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Table 30. Couple's normative views toward joint nutrition decision making

WIFE SUBJECTIVE NORM				HUSBAND SUBJECTIVE NORM			
Study arm	DDE	(95% CI)	p-value	Study arm	DDE	(95% CI)	p-value
I1 ¹ vs C	-0.08	(-0.30, 0.14)	0.481	I1 ¹ vs C	0.33	(0.09, 0.58)	0.006*
I2 ² vs C	-0.12	(-0.31, 0.06)	0.201	I2 ² vs C	0.23	(0.06, 0.40)	0.005*
I2 ³ vs I1	-0.04	(-0.26, 0.17)	0.685	I2 ³ vs I1	-0.1	(-0.35, 0.15)	0.430

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile (with clustered SEs)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile (with clustered SEs)

3 Adjusted for propensity score (with clustered SEs)

Within any cultural context, including this one in rural Niger, qualitative participants explained that individual dynamics vary by household and by couple.

“It depends on the type of household. There are households in which the woman takes care of everything, and there are households in which the man takes care of everything. The man cannot decide in a household where it may be the woman who buys clothes for the children and feeds them. In such a home, the children will respect only their mother. But if it is the husband who takes care of everything, [then] he is free to make his own decisions.”

— MALE (HUSBANDS) FOCUS GROUP, SILC + CARE + MFH (I2)

While changes in nutrition-related, joint decision making were not statistically observed, findings suggest that intervention arms **I1** and **I2** may have begun nudging important psychosocial outcomes on the pathway to behavior change which, in the case of household decision making, will require shifting of longstanding social norms.

Paternal diets

On average, the 1,734 adult males in this sample were aged between 41 – 43 years with significant age differences comparing the three study arms. A greater proportion of men between 18 – 30 years, as well as those without any education, were sampled in the SILC + CARE + MFH (**I2**) study arm than in control. The proportion of monogamous men was also significantly different comparing all three study arms (Table 31).

Table 31. Paternal demographic characteristics by study arm

	CONTROL	I1 (SILC + CARE)	I2 (SILC + CARE + MFH)
Sample sizes of adult male participants by study arm			
<i>n</i>	331	597	806
Age^{a, b, c}, mean +/- SD			
Years	41 +/- 11	42 +/- 11	43 +/- 11
Paternal age range (years)^c, <i>n</i> (%)			
18 – 30	69 (20.8)	103 (17.3)	132 (16.4)
31 – 45	172 (52.0)	306 (51.3)	377 (46.8)
>45	90 (27.2)	188 (31.5)	297 (36.8)
Paternal education^{b, c}, <i>n</i> (%)			
None	287 (86.7)	474 (79.4)	609 (75.6)
Primary	35 (10.6)	97 (16.2)	166 (20.6)
Secondary	9 (2.7)	26 (4.4)	31 (3.8)
Paternal employment^{a, b}, <i>n</i> (%)			
Employed	288 (87.0)	482 (80.7)	708 (87.8)
Not employed	43 (13.0)	115 (19.3)	98 (12.2)
Marital status^{a, b, c}, <i>n</i> (%)			
Monogamous	246 (74.5)	402 (67.3)	455 (56.5)
Polygamous	84 (25.5)	195 (32.7)	350 (43.5)
Number of children^{b, c}, mean +/- SD			

	CONTROL	I1 (SILC + CARE)	I2 (SILC + CARE + MFH)
	5.7 +/- 3.1	6.3 +/- 3.2	6.7 +/- 3.7
Number of children under 5 years, mean +/- SD			
	2.3 +/- 1.2	2.2 +/- 1.3	2.3 +/- 1.3

Chi-square tests were used to compare categorical variables and Wilcoxon rank-sum test and Kruskal-Wallis tests were used to compare continuous variables; ^a I2 vs I1 significant at $p < 0.05$, ^b I1 vs C significant at $p < 0.05$, ^c I2 vs C significant at $p < 0.05$; Differences among comparison groups were adjusted for during analysis, as described in the methods.

At endline, the dietary diversity scores of fathers/husbands did not differ among the three study arms. No significant differences in PDDS were found comparing intervention arms I1 and I2. In the control arm, mean PDDS was 3.4 (\pm 1.4) at baseline and 4.2 (\pm 1.2) at endline. In I1, mean PDDS was 2.8 (\pm 1.0) at baseline and 4.0 (\pm 1.7) at endline. In I2, mean PDDS was 3.0 (\pm 1.1) at baseline and 3.8 (\pm 1.2) at endline (Figure 10).

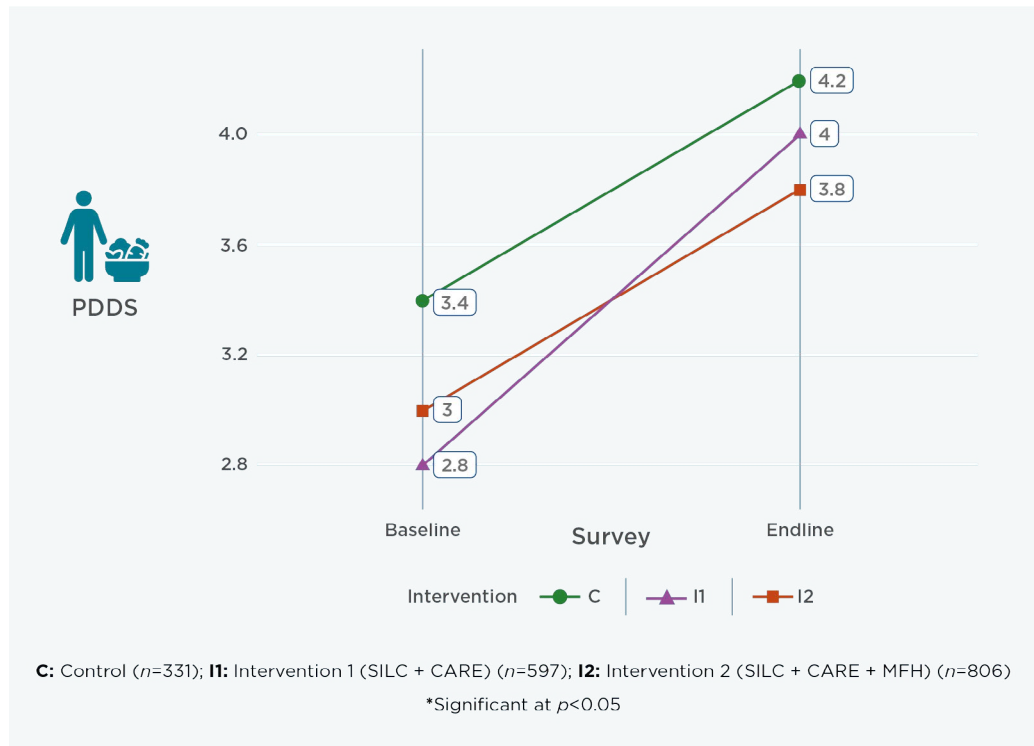


Figure 10. Paternal dietary diversity scores by intervention arm at baseline and endline

There were no observed differences in treatment effect on paternal dietary diversity scores comparing the three study arms at endline (Table 32).

Table 32. Paternal dietary diversity score estimates comparing study arms at endline

	DDE	95% CI	P-VALUE
I1 v C ¹	0.44	(0.05,0.92)	0.076
I2 v C ²	0.08	(-0.26, 0.41)	0.660
I2 v I1 ³	-0.36	(-0.86, 0.13)	0.153

1 Adjusted for maternal age, maternal education, maternal employment, paternal age, paternal education, paternal employment, polygamy, paternal total number of children, child age, wealth quintile)

2 Adjusted for maternal age, maternal education, paternal age, paternal education, polygamy, paternal total number of children, child age, child birth order, wealth quintile

3 Adjusted for propensity score

Both men and women who were interviewed in control and I1 and I2 study arms described the diets of adults to be the same regardless of gender.

“ I eat the same type of food as my wife. We have been married for five years but we still eat the same food. My diet is not different from my wife’s. I buy the food and she cooks it...and then we eat the prepared meal together.”

— HUSBAND INTERVIEW, SILC + CARE + MFH (I2)

Husbands also ascribed any dietary changes to greater food availability during harvest season at the time of data collection.

“ Now we are in the harvest season. The change we had in the past months (was that) we had to work as laborers to earn money to buy some food to eat. Now we don’t have to. The food is available and we eat the quantity of food that we want.”

— HUSBAND INTERVIEW, SILC + CARE + MFH (I2)

Regardless of food availability, participants in all three study arms expressed the importance of having financial resources for ensuring adequate food quantity, less so quality.

“ No, there has not been a big change. Because if it is not rice or spaghetti, it is still millet-based food that we eat. And all of this is because we do not have the money to change our diets.”

— HUSBAND INTERVIEW, CONTROL

The underlying process-related findings that may further contextualize and explain intervention impacts are described in the next chapter.

Process Evaluation Findings

This chapter presents process evaluation findings synthesized from survey, interview, focus group, and direct observation data that, together, help explain factors influencing the primary outcomes.

- The Girma project, which included 11 different program modalities, directly reached 770,559 uniquely-identified participants from 2020 – 2023. During the same period, 79,693 men and women participated in SILC activities (58% of program target); 122,822 women attended at least one Care Group (102% of target); and 98,371 men and women joined MFH activities (74% of target). A greater proportion of men to women were reached by SILC and MFH activities relative to program targets, while the absolute number of women reached was greater in both.
- MFH couples indicated ‘high’ or ‘very high’ satisfaction of most categories pertaining to the structural aspects of MFH sessions, for example comfortable MFH session facilities (99%), adequate session timing (96%), and understandable materials (99%). A greater proportion of the total husbands (63%) than total wives (42%) reported attending all 16 scheduled MFH sessions.
- Consistent Care Group attendance was low, overall. Half of endline respondents (50%) attended no more than 4 of the 16 available Care Group meetings. Attendance patterns were similar among women in both CARE + SILC (I1) and CARE + SILC + MFH (I2) study arms, which may be partially explained by delayed roll-out of Care Groups and materials. Among all SILC Group participants, a greater proportion of people attended more than at least half of the 30 sessions in both I1 and I2.
- Among those 655 households eligible for participation in both a Care Group and a SILC Group program activity, just **24% (156)** of them reported doing so at endline. Among those 806 households eligible for full I2 participation in the three program modalities, just **15% (117)** of them reported doing so at endline. Among the smaller sample of women exposed to each layered activity, a sensitivity analysis found that dietary diversity scores increased in both I1 and I2 at endline, relative to those of control, and reflective of the same improvement observed among full I1 and I2 samples.
- The MFH nutrition module focusing on dietary diversity was not introduced until November - December 2022 in I2 communities, and thus it reached some, but not all of the MFH participants who had finished their participation prior to that date. The fidelity of MFH content delivered was 94 – 99% during the three core MFH modules, but 64 – 74% for the two nutrition modules. The key message related to dietary diversity was covered in approximately 70% of MFH sessions observed.
- Interviews with both MFH facilitators and participants indicated that the religious and cultural tailoring of MFH curricula was a primary strength of implementation and a key reason why participant satisfaction and acceptability were so high among MFH couples.

Program and evaluation timing

Findings in this chapter help to explain the extent to which programming had an effect on desired maternal and child nutrition outcomes. The figure below depicts important contextual factors that may have impacted program roll-out and quality as well as the timing of key events vis-à-vis evaluation fieldwork at baseline and endline (Figure 11).

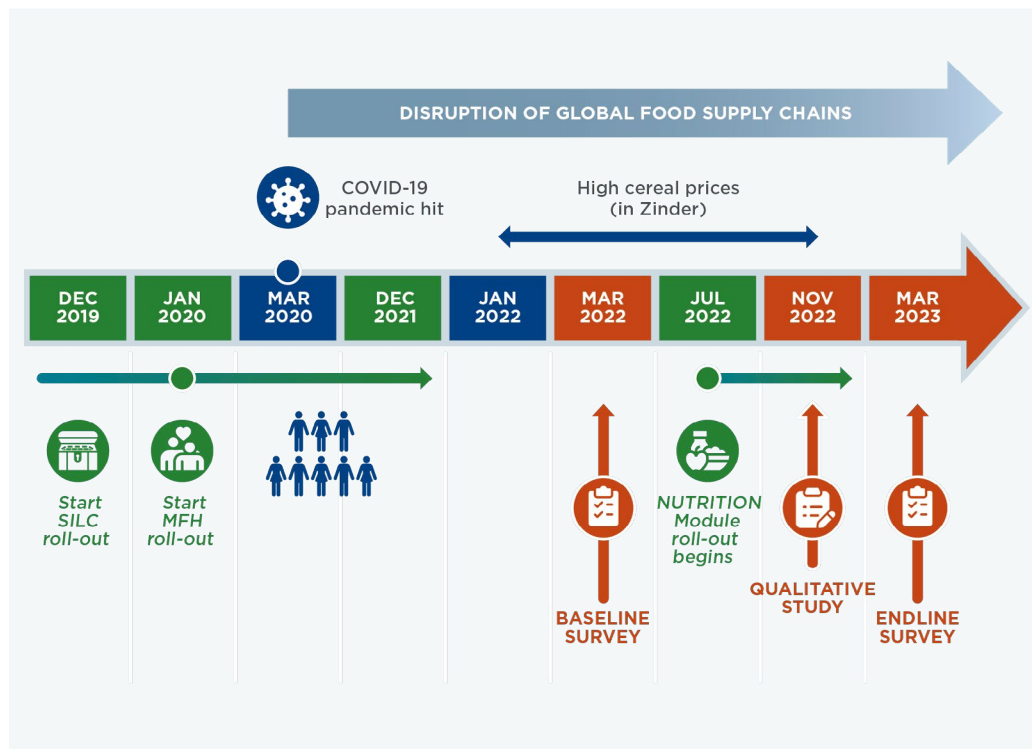


Figure 11. Timing of nutrition module roll out vis-à-vis program evaluation data collection

Program reach

Reach can be understood as the proportion of the intended target population that participates in a program or intervention. It helps in understanding the representativeness of participants and the potential for generalizability of program effects.

GIRMA reach. To understand the reach of the layered activities (SILC + CARE + MFH) for this evaluation, secondary program data, including those available in annual reports, were compiled, summarized, and validated by the Niger-based Girma monitoring, evaluation, and learning team. Overall, the Girma project's eleven complementary program modalities reached 770,559

uniquely-identified participants (308,223 males; 462,336 females) between FY 2020 and 2023. The reach of the three specific program modalities serving as the basis of this evaluation are described below.

SILC Group reach. The number of SILC Group participants increased from 13,490 in 2020 to 79,693 in 2023. More than 100% of the program reach target was met during 2020, before dropping to 84% in 2021 and then again to 61% and 23% in 2022 and 2023, respectively. During four years, 58% of the SILC Group reach target was met (Table 33).

Table 33. Number of SILC Group participants reached compared to program targets by year

FISCAL YEAR (FY)	MALES REACHED	MALE TARGET	% FY TARGET MET	FEMALES REACHED	FEMALE TARGET	% FY TARGET MET	TOTAL REACHED	TOTAL TARGET	% FY TARGET MET
2020	4,801	1,800	267%	8,689	10,200	85%	13,490	12,000	112%
2021	8,858	9,755	91%	19,191	23,537	82%	28,049	33,292	84%
2022	8,524	12,890	66%	18,465	31,101	59%	26,989	43,991	61%
2023	3,526	15,663	23%	7,639	33,285	23%	11,165	48,948	23%
Total	25,709	40,108	64%	53,984	98,123	55%	79,693	138,231	58%

Data Source: MFH Annual Reports and Girma monitoring, evaluation, and learning team

Care Group reach. Care Group activities primarily targeted women of reproductive age, pregnant and lactating women, and mothers of young children for participation. Through 2023, more than 122,000 women participated in at least one Care Group, a reach that surpassed the program target (Table 34).

Table 34. Number of Care Group participants reached compared to program targets by year

FISCAL YEAR (FY)	NO. FEMALE PARTICIPANTS	FEMALE TARGET	% FY TARGET MET
2020	15,582	21,720	72%
2021	29,848	42,132	71%
2022	77,392	57,060	136%
2023	0	0	NA
Total	122,822	120,912	102%

Data Source: MFH Annual Reports and Girma monitoring, evaluation, and learning team

MFH reach. Between 2020 and 2023, cumulatively, the number of men and women who were reached by MFH activities increased from 1,157 to 98,371. A greater proportion of husbands (78%) than wives (71%) participated in at least one MFH activity relative to program targets, although the absolute number of participating wives (74,410 women) was greater than that of husbands (57,898 men) (Table 35).

Table 35. Number of MFH participants reached compared to program targets by gender and year

FISCAL YEAR (FY)	MALES REACHED	MALE TARGET	% FY TARGET MET	FEMALES REACHED	FEMALE TARGET	% FY TARGET MET	TOTAL REACHED	TOTAL TARGET	% FY TARGET MET
	532	9,789	5%	625	11,491	5%	1,157	21,280	5%
2021	10,657	18,492	58%	12,511	21,708	58%	23,168	40,200	58%
2022	28,824	27,167	106%	33,836	34,577	98%	62,660	61,744	101%
2023	5,238	2,450	214%	6,148	6,634	93%	11,386	9,084	125%
Total	45,251	57,898	78%	53,120	74,410	71%	98,371	132,308	74%

Data Source: MFH Annual Reports and Girma monitoring, evaluation, and learning team

The COVID-19 pandemic limited MFH reach in 2020 when just 5% (1,157/21,280 participants) of the program reach target was achieved. By the end of FY 2021, though, more than 20,000 people had been reached, a number still representing just 58% of the annual target. The CRS implementation team members explained that during the first two quarters of 2021 the lack of illustrated flip charts/job aides ready for distribution limited reach.

Some of this initial delay in the MFH roll-out can be attributed, at least in part, to the typical inertia that often characterizes the introduction of a new and complex intervention; this is due to the inherent challenges involved when introducing a new program, including the need for stakeholders to familiarize themselves with new approaches, the necessity for thorough training of staff, and the requisite planning and coordination associated with programming at such scale.

Moreover, during this same time, participants with agricultural livelihoods faced difficulties participating in MFH sessions during daytime, particularly when demands were higher in one season, for example the harvest, than others. To overcome this participation barrier, the implementation team moved the MFH sessions to afternoons and evenings as a strategy to accommodate participant livelihood schedules, thus helping to meet reach targets in subsequent years (2022 – 2023).

Dose delivered and dose received

Dose delivered refers to the amount, frequency, and duration of the program components provided to participants. Dose received refers to the extent to which participants engage with and utilize the program components.

MFH session duration and size of attendance. Direct observations were conducted among 39 MFH sessions that on average lasted approximately 30

minutes shorter than the 1.5-hour target duration (MFH Annual Reports, 2021; MFH Annual Report, 2022).

During observations, MFH session sizes included slightly more couples, on average (12 couples per session), than the target MFH session size of 10 couples. In most (80%) observed MFH sessions, husbands and wives sat together while in attendance, per facilitation instructions. In the other 20% of observed sessions, it was difficult for the research team to accurately assess the number of couples in attendance due to individual attendees (e.g., a husband in attendance without his wife) or gender-specific seating (i.e., all females separate from all males in attendance). Two different scenarios are described in examples of observational field notes taken during the MFH observations below:

“*The participants were not seated next to each other. The two groups were separated, with the women apart from the men on the other side. The women were more motivated than the men because they were more attentive than them. The men discussed among themselves and some were on their phones.*”

— MFH OBSERVER 1, FIELD NOTES

“*During the observation, I noticed that the MFH session was not done in [husband and wife] couples, which is what made it difficult for me when writing down the number of couples. The participants included 4 men and 11 women.*”

— MFH OBSERVER 2, FIELD NOTES

During one observed MFH session, the facilitator was not in attendance but the session continued thanks to the facilitation by a participant. Fidelity of MFH facilitation, which was high overall, is described in more detail later in this chapter.

Satisfaction with structural aspects of MFH sessions. Survey participants indicated ‘high’ or ‘very high’ satisfaction of most categories pertaining to the structural aspects of MFH sessions. Specifically, participants pointed to comfortable MFH session facilities (99%), adequate session timing (96%), and understandable materials (99%) presented as reasons for high satisfaction. In addition, more than half (58%) of MFH participants agreed that the sessions were of adequate duration and most (76%) also agreed that the travel distance to their session was not too long ([Table 36](#)).

Table 36. Satisfaction with structural aspects of MFH sessions among husbands and wives who both participated in at least one session together

SATISFACTION QUESTION CONTENT RELATED TO MFH SESSIONS	HUSBANDS (N = 290)	WIVES (N = 290)
The facility in which the MFH was conducted was comfortable.		
Strongly agree/agree	288 (99%)	288(99%)
Disagree/strongly disagree*	2 (1%)	2 (1%)
The material presented by the facilitator was understandable.		
Strongly agree/agree	288 (99%)	285 (98%)
Disagree/strongly disagree*	2 (1%)	5 (2%)
The duration of the MFH sessions was too long.		
Strongly agree/agree	121 (42%)	200 (69%)
Disagree/strongly disagree*	169 (58%)	90 (31%)
The duration of the MFH sessions were too short.		
Strongly agree/agree	55 (19%)	40 (14%)
Disagree/strongly disagree*	235 (81%)	250 (86%)
I had to travel far to reach the MFH sessions.		
Strongly agree/agree	83 (29%)	70 (24%)
Disagree/strongly disagree*	207 (71%)	220 (76%)
The time in which the MFH group met was appropriate.		
Strongly agree/agree	279 (96%)	281 (97%)
Disagree/strongly disagree*	11 (4%)	9 (3%)
The distance to my MFH group meeting location took too much time to travel to.		
strongly agree/agree	65 (22%)	104 (36%)
disagree/strongly disagree*	225 (78%)	186 (64%)
I felt safe traveling to my MFH group meeting location.		
Strongly agree/agree	284 (98%)	287 (99%)
Disagree/strongly disagree*	6 (2%)	4 (1%)

*Includes 'neutral' responses

MFH session attendance. A greater proportion of total husbands (63%) than total wives (42%) reported attending all of the 16 scheduled MFH sessions at endline, revealing a gender-related disparity in full MFH session attendance ([Table 37](#)).

Table 37. Self-reported MFH session attendance among husbands and wives

MFH PARTICIPANT TYPE ¹	1 – 7 SESSIONS	8 – 15 SESSIONS	ALL 16 SESSIONS
Husbands (n = 290)	42 (14.5%)	65 (22.4%)	183 (63.1%)
Wives (n = 290)	76 (26.2%)	91 (31.3%)	123 (42.4%)

1 In households where both the husbands and wives reported participating in MFH

During interviews, MFH facilitators explained that they faced challenges maintaining consistent participant attendance. Competing demands, such as participant work commitments and health issues, were primary barriers to participant attendance reported.

“ It is not the same during harvest time as it is now. We have modified the [MFH session] hours. During the growing season, because the couples are always there... but during the rainy season, because of the rain or the agricultural work, there were postponements [until later in the day when attending would be easier for couples].”

— MFH FACILITATOR

MFH facilitators explained sometimes adapting the delivery schedule in effort to accommodate participant schedules, with particular attention to livelihood demands that vary across seasons.

When participants were able to attend an MFH session, more than 80% of both husbands and wives reported staying the full duration, rather than leaving early (Table 38).

Table 38. Proportion of fully-attended MFH sessions among husbands and wives at endline

MFH PARTICIPANT TYPE ¹	STAYED FULL TIME LESS THAN HALF OF SESSIONS ATTENDED	STAYED FULL TIME APPROXIMATELY HALF THE TIME	STAYED FULL TIME AT MOST OF SESSIONS ATTENDED	STAYED FULL DURATION AT ALL SESSIONS ATTENDED
Husbands (n = 290)	7 (2.4%)	9 (3.1%)	38 (13.1%)	236 (81.3%)
Wives (n = 290)	5 (1.7%)	9 (3.0%)	36 (12.4%)	240 (82.8%)

1 Sample sizes reflect the 290 households where both the husbands and wives reported participating in at least one MFH session

Care Group session attendance. Care Group attendance was similar among women in both CARE + SILC (I1) and CARE + SILC + MFH (I2) study arms, with the greatest proportion of women who reported attending 1 – 4 sessions (50%), followed by a smaller proportion who attended between 5 – 10 sessions (33%) and 11 – 16 sessions (19%). (Table 39).

Table 39. Self-reported Care Group attendance comparing I1 and I2 study arms at endline

STUDY ARM	1 – 4 SESSIONS ATTENDED	5 – 10 SESSIONS ATTENDED	11 – 16 SESSIONS ATTENDED
CARE + SILC (I1) (<i>n</i> = 127) ¹	56 (44%)	46 (36%)	25 (19%)
CARE + SILC + MFH (I2) (<i>n</i> = 217) ¹	115 (56%)	61 (28%)	41 (19%)

1 Sample sizes represent only those women (wives) who reported participating in at least one Care Group session at endline

SILC Group session attendance. At endline, 52% of CARE + SILC + MFH (I2) households (either husband or wife) reported attending all 30/30 SILC sessions compared to the 38% that did so in the CARE + SILC (I1) study arm. More than 100 households in each study arm attended fewer than half the sessions (Table 40).

Table 40. Self-reported SILC group sessions attendance comparing I1 and I2 study arms at endline³

STUDY ARM	1 – 14 SESSIONS	15 – 19 SESSIONS	20 – 29 SESSIONS	ALL 30 SESSIONS
CARE + SILC (I1) (<i>n</i> = 542) ²	115 (21%)	73 (13%)	146 (27%)	208 (38%)
CARE + SILC + MFH (I2) (<i>n</i> = 786) ³	109 (14%)	59 (8%)	206 (26%)	412 (52%)

Interview participants explained that the inability of some individuals to provide initial investment money, as well as to make the requisite payments from week to week throughout SILC was a possible barrier to consistent attendance.

“*It’s SILC that is going to be difficult to participate in, as I told you, we don’t have the financial means..you have to have an income-generating activity. You cannot participate without making a payment one week, two weeks..”*

— MFH FACILITATOR

3 Sample sizes represent those households wherein either a husband OR a wife participated in at least one SILC group session at endline

Self-reported participation and activity layering by study arm

CARE + SILC (I1) participation. There were 655 total **I1** households that were surveyed where *either* the husband or wife could have attended a SILC Group session, while the wife could also have attended a Care Group session. Among those 655 households eligible for participation in both a Care Group and a SILC Group program activity, just **24% (156)** of them reported doing so at endline.

CARE + SILC + MFH (I2) participation. There were 806 total **I2** households that were surveyed where *either* the husband or wife could have attended a SILC Group session, while the wife could also have attended a Care Group session, and *both* the husband and wife could have attended at least one MFH session. Among those 806 households eligible for full I2 participation in the three program modalities, just **15% (117)** of them reported doing so at endline.

Despite low participation across the layered activities, both interview and focus group discussion participants who fully participated in **I2** activities explained that participating in all three programs was not so difficult to manage. They explained complementary lessons across the three activity types, as well as well-planned session timing that allowed for participation in each type of session on its own day and time.

“*No, it's not difficult to combine these three activities, as they do not take place on the same day. We have not encountered any difficulties in combining these three interventions [as a participant].*”

— FOCUS GROUP, HUSBAND, I2 (CARE + SILC + MFH)

Qualitative data suggest that the layering of MFH sessions onto CARE + SILC did not add an undue participation burden for at least those couples wishing to participate in all three, and thus is likely not responsible for the differential session attendance reported in tables 5 – 7. The perceived value of attending any one session for individuals, as well as factors outside of just session scheduling (e.g., competing demands of daily life) contributed to missed sessions/low attendance for any of the three intervention modalities. In addition, *Girma* includes eleven different program activities and those that formed the basis of this program evaluation were not promoted as a joint activity package to households. As a result, households were permitted to participate in any number of *Girma* program activities on a purely volunteer basis, and participating in any one *Girma* activity (e.g., MFH) did not require someone to participate in another activity, even those that formed the basis of this program evaluation.

Sensitivity analysis of maternal and child outcomes based on exposed participants

Given the participation rates presented in the tables above, we conducted a sensitivity analysis to understand whether diet diversity findings may have differed from those presented in the previous chapter among the full enrolled sample at endline.

Dietary outcomes of exposed women only. Among the smaller sample of women exposed to one or more sessions of the program activities, the dietary diversity scores still increased in both SILC + CARE (I1) ($n = 156$ women) and SILC + CARE + MFH (I2) ($n = 117$ women) at endline, relative to those of control. This finding aligns with that presented in the previous chapter (Figure 12).

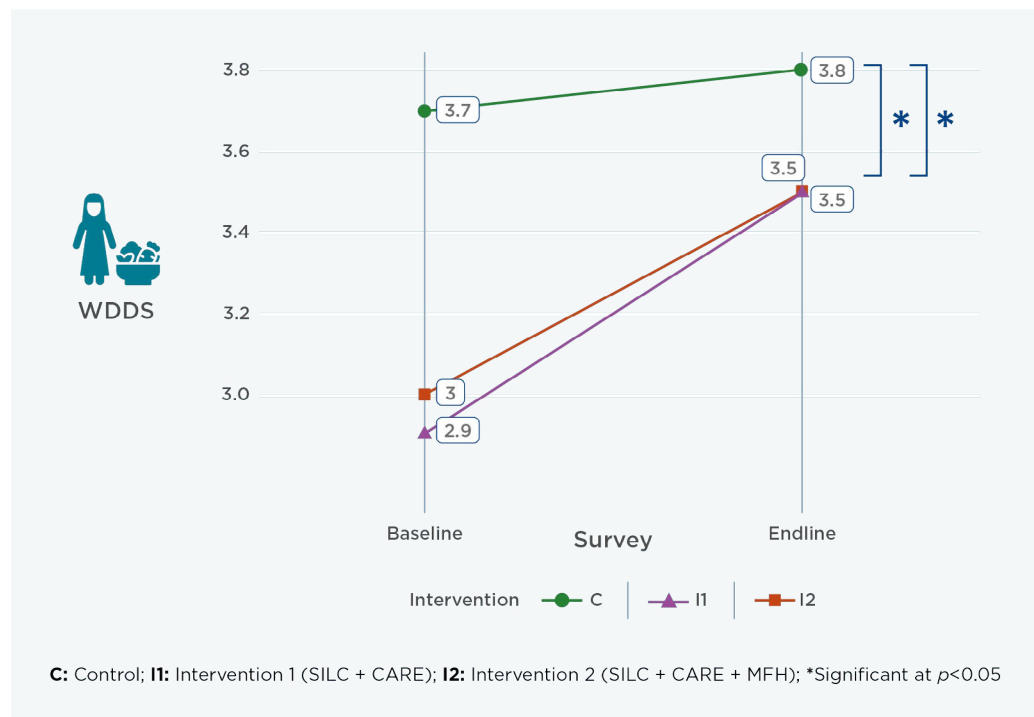


Figure 12. Difference-in-difference impact estimates of WDDS by study arm and survey round among only those exposed (sensitivity analysis)

Compared to control participants at endline, WDDS increased 0.51 (95% CI: 0.16, 0.87) points with exposure to I1 (SILC + CARE) and 0.43 (95% CI: 0.11, 0.75) points with exposure to I2 (SILC + CARE + MFH). No significant differences were observed comparing I1 and I2 WDDS at endline (Table 41).

Table 41. Women’s diet diversity among exposed women only comparing study arms at endline

STUDY ARM	DDE	95% CI	P-VALUE
I1 v C ¹	0.51	(0.16, 0.87)	0.005*
I2 v C ²	0.43	(0.11, 0.75)	0.008*
I2 v I1 ³	-0.08	(-0.50, 0.34)	0.712

- 1 Adjusted for maternal education, paternal education (with clustered SEs)
- 2 Adjusted maternal education, paternal education, currently pregnant, wealth quintile (with clustered SEs)
- 3 Adjusted for propensity score

Dietary outcomes of exposed children only. The CDDS among children aged 6 – 59 months did not differ between either intervention SILC + CARE (I1) and SILC + CARE + MFH (I2) study arms relative to control at endline. This finding aligns with that presented in the previous chapter (Figure 13).

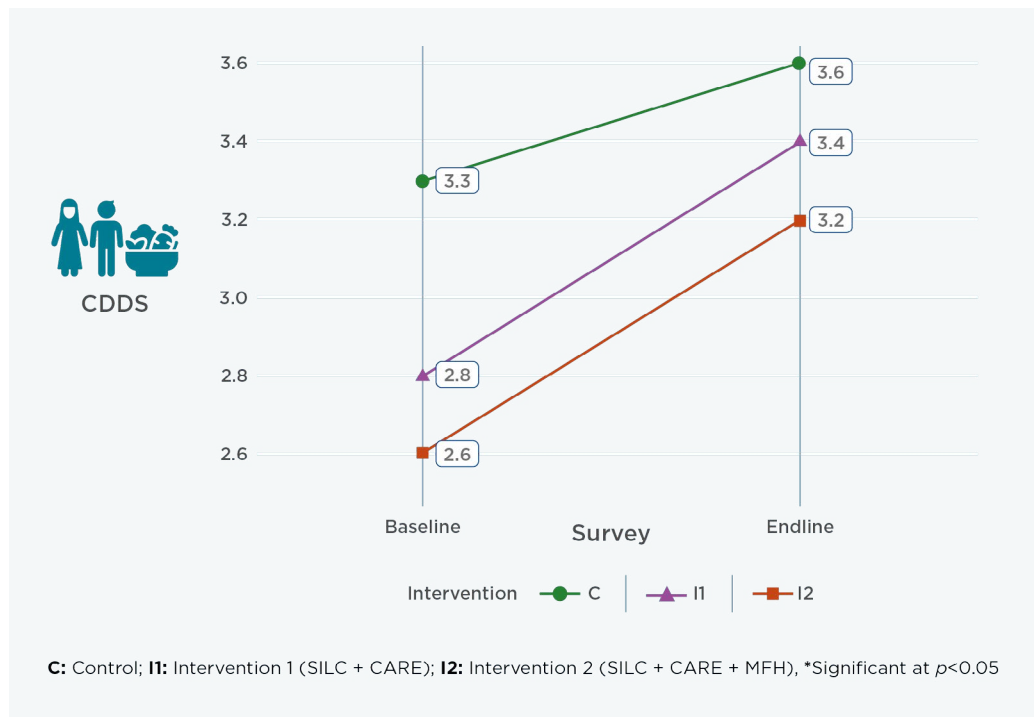


Figure 13. Difference-in-difference impact estimates of CDDS by study arm and survey round among only those exposed (sensitivity analysis)

A treatment effect was not observed on CDDS at endline among the three study arms (Table 42).

Table 42. Child dietary diversity among exposed children only comparing study arms at endline

	DDE	(95% CI)	P-VALUE
I1 v C ¹	0.22	(-0.12, 0.55)	0.203
I2 v C ²	0.30	(-0.06, 0.68)	0.107
I2 v I1 ³	0.09	(-0.27, 0.46)	0.620

1 Adjusted for maternal education, paternal education (with clustered SEs)

2 Adjusted maternal education, paternal education, currently pregnant, wealth quintile (with clustered SEs)

3 Adjusted for propensity score

Program fidelity

Fidelity of MFH program delivery can be understood as the extent to which a program is implemented as intended by its developers. It assesses whether the program's core components are being delivered accurately and consistently across various settings and populations.

Layering and sequencing interventions. Overall, MFH facilitators reported positive experiences coordinating and interacting with other program implementers on the CARE Group and SILC teams. During interviews, facilitators expressed the importance of joint coordination of activities across the three program arms that helped ensure few reported scheduling conflicts during implementation.

“No, there's no challenge [scheduling] because SILC has its day, Care Groups have their day, and MFH also has its [own] day.”

— MFH FACILITATOR

Moreover, MFH facilitators described positive experiences collaborating with implementers from the SILC and CARE Group teams.

“We work closely with them [CARE Group and SILC implementers]. What's more, I was even a member of SILC. Pairing the three programs has no problem, which is why I told you about the complementarity between us [implementers].”

— MFH FACILITATOR

Knowledge sharing and sensitization support among implementers across the three program modalities were two salient examples of this collaboration.

Fidelity of MFH facilitator training activities. MFH couples were recruited to be facilitators based on the following criteria: 1) being a married couple between 20 and 40 years old (at least one of the two partners); 2) being available in the village (i.e., no temporary migration); 3) having the ability to read and write in Hausa, French, or Arabic; 4) being dynamic and of good character; 5) being considered a “model couple” in the village; 6) being able to speak in public; 7) and ensuring at least one spouse member can recite Koranic verses or hadiths (Personal communication, MFH Team Leader). From 2020 – 2022, more than 500 new MFH facilitator couples were recruited and trained (Table 43).

Table 43. Number of new MFH facilitator couples trained per year (FY2020 – 2023)

YEAR	2020	2021	2022	2023*
Number of new MFH facilitator couples trained	169	254	150	Not available

Source: MFH Annual Reports; *Data not yet available (July, 2023)

Overall, MFH facilitators reported positive training experiences and expressed gratitude for gaining the requisite knowledge, skills, and confidence to effectively lead MFH sessions.

“ There are no negative aspects to the training, but there are many positive aspects, including teaching couples how to live together, how to manage family property, how to make joint decisions, etc.”

— MFH FACILITATOR

Some MFH facilitators expressed a desire for additional and extended training sessions with suggestions that were both content- (e.g., family management, women’s issues) and delivery-based (e.g., best communication practices, adult education approaches, Quranic translations).

“ I’d like further training to challenge the non-participation of reluctant couples at school and improve my experiences so that I have a [more effective] communication approach that would enable me to convince reluctant couples [of the key MFH messages].”

— MFH FACILITATOR

MFH facilitators explained that such additional trainings may have helped them to better engage with participants and thus helped to improve participation/attendance.

Nutrition module training. While MFH trainings occurred during each year of implementation, facilitators explained that a newly-added expanded nutrition module focusing on dietary diversity was only added in July 2022. Prior to this, a nutrition-related session was included within the core modules, but it did not include the nutrition-specific content of the new expanded module. The new dietary diversity curriculum was incorporated into a single training workshop for the 150 new facilitator couples in 2022, as well as into various re-training sessions that were conducted in eleven communes and typically included 25 – 30 existing MFH facilitators per session.

The timing of this nutrition module roll out is reflected in [Figure 11](#), which also highlights other important contextual milestones that may have impacted the ability of the programming to see its desired effects. During these retraining sessions, as well as during routine trimestral meetings, the new nutrition module was presented to *formateurs* (i.e., couples in charge of training the MFH facilitators), as well as directly to MFH facilitators, and instructions to disseminate it to both current and past MFH participants at the village level (MFH Annual Report, 2022). In particular, according to Girma monitoring data, the additional nutrition module was only rolled out in the **12** villages in November 2022 (and completed one month later).

As a result of this approach, the MFH module focusing on dietary diversity, which represents the primary outcome of interest assessed in this evaluation, reached some but not all of the MFH participants who had finished prior to November 2022.

“*The implementation team did its best, but [all] participants did not receive the new nutritional content*”

— MFH FACILITATOR

At the time of this endline evaluation when qualitative interviews were conducted (November 2022), four MFH facilitators had either still not received the new nutrition curriculum or had not received formal training on it.

“*...there are modules we are not well trained in, such as nutrition...for the following reasons: we did not have this module at the beginning, and our trainers did not tell us anything about it...We only work with what [MFH content] we know, to explain it to the women. It would have been better for us if we had been trained on it [new nutrition module].*”

— MFH FACILITATOR

Without participant exposure to the nutrition module focused on dietary diversity, then changes in psychosocial or behavioral outcomes related to dietary diversity in CARE + SILC + MFH (I2) would not be expected.

Content fidelity of MFH sessions. During 39 MFH session observations, the fidelity of content delivered was 94 – 99% during the three core MFH modules, but 64 – 74% for the two additional modules focusing on nutrition (Table 44).

Table 44. Observed content fidelity by MFH session module

CONTENT COVERED BY MODULE	NUMBER OF TOTAL CONTENT-SPECIFIC DOMAINS	MEAN NUMBER (%) OF CONTENT-SPECIFIC DOMAINS COVERED PER SESSION
Core introduction sessions: Why the Maison Familiale Harmonieuse and the foundations of the Maison Familiale Harmonieuse	12	11.9 (99%)
Core sessions 1 - 4: The four pillars of the Maison Familiale Harmonieuse	16	15.0 (94%)
Core session 1: The walls of the Maison Familiale Harmonieuse	18	17.0 (94%)
Additional session 1: Good nutrition for the family with special attention to the mother and the child	20	12.9 (64%)
Additional session 2: Specific protection measures for good health and nutrition, including additional session focused on elements of a nutritious diet.	96	70.3 (73%)

*Based on 39 MFH session observations

MFH nutrition content fidelity. During direct observations of the two additional nutrition modules, the facilitators covered/delivered most prescribed MFH topics in 62 – 77% of the observations. Content fidelity of WASH topics was lower, however, ranging between 38 – 67% of concepts covered by facilitators (Table 45).

Table 45. Content fidelity of general health and nutrition concepts

PRESCRIBED MFH CONTENT – GENERAL HEALTH AND NUTRITION CONCEPTS TO BE COVERED DURING MFH SESSIONS	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
Do facilitators present 3 images to facilitate discussion?	9/13 (69%)
Do facilitators ask participants the following questions?	NA
What other aspects of health should be considered?	9/13 (69%)
What is the responsibility of mothers and fathers?	9/13 (69%)
What steps should couples take to maintain good health and nutrition?	9/13 (69%)
Do facilitators convey the following messages?	NA

PRESCRIBED MFH CONTENT - GENERAL HEALTH AND NUTRITION CONCEPTS TO BE COVERED DURING MFH SESSIONS	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
Water, hygiene and sanitation are other aspects of good health that should be considered.	9/13 (69%)
Mothers and fathers have a responsibility to adopt positive attitudes and behaviors for all family members.	8/13 (62%)
Do facilitators explain the steps couples should take to maintain good health and nutrition?	NA
Use latrines for ourselves and our children	8/13 (67%)
Stop defecating in the open	5/13 (38%)
Properly dispose of our children's feces in the latrine	5/13 (38%)
Use clean water	5/13 (38%)
Wash hands at designated times	5/13 (38%)
Create hand-washing station for use by family members (with soap & water)	5/13 (38%)
Cover food	7/13 (54%)
Prevent livestock from roaming freely in the compound	8/13 (62%)
Do couples identify planned actions to maintain good health and nutrition?	10/13 (77%)
Do facilitators help participants to carry out planned actions if they are unable to do so?	10/13 (77%)
Do facilitators ask participants the following questions?	NA
What are we doing as a couple or individually to eliminate or reduce health risks in the home?	8/13 (62%)
What should the couple work on first?	8/13 (62%)

Facilitators discussed key 4-STAR Diet topics per the MFH curriculum in 54 - 92% of observations, depending on the specific content. The key message related to dietary diversity ("*Eating plenty and a variety of different nutritious foods improves nutrition and health.*") was covered in approximately 70% (9/13) of MFH sessions observed (Table 46).

Table 46. Content fidelity for topics pertaining to the 4-STAR diet

PRESCRIBED MFH CONTENT - 4-STAR DIET CONTENT TO BE COVERED DURING MFH SESSIONS	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
Do the facilitators describe the importance of nutrition?	10 / 13 (77%)
Do facilitators discuss the following message?	NA
Eating plenty and a variety of different nutritious foods improves nutrition and health	9 / 13 (69%)
Do facilitators present an image and ask participants which food groups they observe?	10 / 13 (77%)

PRESCRIBED MFH CONTENT - 4-STAR DIET CONTENT TO BE COVERED DURING MFH SESSIONS	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
Do facilitators convey the following messages about the image presented?	NA
• The image is of a 4-star diet	11 / 13 (92%)
• 4-star diet is a diversified diet	11 / 13 (92%)
Do the facilitators point out each star of the 4-star diet and ask the following questions?	NA
• What is the main food group of each star?	12 / 13 (92%)
• What are some examples of foods in the food group?	12 / 13 (92%)
Do the facilitators point out different food groups in the star and show additional photos of locally available foods?	12 / 13 (92%)
Do facilitators provide a list of food groups and examples consumed locally?	NA
• Animal-rich foods (meat, chicken, fish, liver, eggs, etc.)	11 / 13 (85%)
• Staple foods (cereal grains, tubers, potatoes, yams, yellow sweet potatoes)	11 / 13 (85%)
• Pulses and nuts (peanuts, sesame, soy, peas, cowpeas)	11 / 13 (85%)
• Fruits and vegetables (Fruits: papaya, mango, orange, guava; vegetables: dark green leaves, carrots, pumpkin, lettuce, cabbage, onion, eggplant)	11 / 13 (85%)
Do facilitators ask participants how important it is for women and children under 2 to eat from different food groups?	12 / 13 (92%)
Do facilitators convey the following messages about the importance of eating from different food groups?	NA
Eating different food groups helps family members eat the foods that provide them with the nutrients they need (i.e., vitamin A, iron, iodine)	10 / 13 (77%)
Vitamin A, iron and iodine are key nutrients missing from the diets of women and children	10 / 13 (77%)
Various diets provide other key nutrients such as folate, zinc and protein	7 / 13 (54%)
A variety of foods should be eaten at every meal, not just once a day	7 / 13 (58%)

Content fidelity was high (69% - 92%) for 4-STAR diet topics specific to infants aged 6 - 9 months, as well as for other more general nutrition messages for young children ([Table 47](#)).

Table 47. Content fidelity for topics pertaining to the 4-STAR diet for young children (part 1)

PRESCRIBED MFH CONTENT – 4-STAR DIET FOR YOUNG CHILDREN SPECIFICALLY (PART 1)	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
Do the facilitators show the following picture of what a 6- to 9-month-old should eat?	12/13 (92%)
Do the facilitators explain the following about the picture above?	
• There are 4 food groups	11/13 (85%)
• Meat, chicken, fish, milk, etc.	11/13 (85%)
• Corn, rice, millet, sorghum, potatoes, yams, cassava, etc.	12/13 (92%)
• Beans, lentils, soy, peanuts, etc.	12/13 (92%)
• Mango, orange, melon, watermelon, banana, papaya, carrots, tomatoes, etc.	12/13 (92%)
Do facilitators ask participants the following questions?	
• What should children aged 6 to 9 months eat?	10/13 (77%)
• How often should children eat each day?	9/13 (69%)
Do facilitators convey the following messages about child nutrition?	
• Children should have a 4-star diet with a variety of foods.	12/13 (92%)
• Give porridge or enriched mashed potatoes	11/13 (85%)
• Give crushed fruit.	10/13 (77%)
• Continue to breastfeed on demand day and night until 2 years	11/13 (85%)
• Between 6 and 9 months, the child needs three meals (porridge, purée) a day while continuing to breastfeed on demand day and night.	11/13 (85%)

For nutrition messages more specific to young children older than 9 months of age, the prescribed content was delivered in most observed MFH sessions with the exception of describing what ‘denser’ means when referring to food consistency; just 38% of observed MFH sessions covered this concept. Facilitators covered key messages related to the diets of children aged 12 – 23 months in 62% (8/13) of the observed MFH sessions ([Table 48](#)).

Table 48. Content fidelity for topics pertaining to the 4-STAR Diet for young children (part 2)

PRESCRIBED MFH CONTENT – 4-STAR DIET FOR YOUNG CHILDREN SPECIFICALLY (PART 2)	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
Does the facilitator show the images below and ask about the differences between what an infant should eat between 6 and 9 months and a toddler between 9 and 12 months?	10/13 (83%)
Do the facilitators provide the following answers to question 21?	NA
• The older child needs more varied meals than the younger child.	9/13 (69%)
• A 9- to 12-month-old needs a 4-star diet like a 6- to 9-month-old, but with one more meal a day.	10/13 (77%)
• Food for a 9- to 12-month-old can be denser than food for a 6- to 9-month-old.	9/13 (69%)
Do facilitators explain what “denser” means?	5/13 (38%)
Do facilitators ask participants what the difference is between what a 12- to 24-month-old eats and what a 9- to 12-month-old eats?	10/13 (77%)
Does the facilitator convey the following message?	NA
• A 12- to 24-month-old needs a 4-star diet and an extra snack.	12/13 (92%)
• A child from 12 to 24 months should eat independently	9/13 (69%)
Does the facilitator convey the following about what children (aged 12-24 months) should eat?	NA
• Breakfast: fortified porridge, doughnut or bread plus milk	8/13 (62%)
• Lunch and dinner made up of foods from the family dish served in a pot	8 /13 (62%)
• Two snacks a day (doughnut, cookie, milk, hard-boiled egg...)	8/13 (62%)
• Always add a piece of fruit	8/13 (62%)
• Gradually increase the amount of meals	8/13 (62%)
• Give a little from each food group at each meal	8/13 (62%)
• In addition to breast milk, he should receive 3 varied meals a day and 2 snacks. “Take from the family dish and give him some of your fortified porridge, add some fruit.”	8/13 (62%)
Do facilitators mention that children ages 2-5 years need the same diet as a child ages 12-24 months, except they are not breastfed?	9/13 (69%)
Do facilitators ask participants to summarize what they saw when they looked at the 3 images?	NA
• All children must eat a 4-star diet	• 11/13 (85%)

PRESCRIBED MFH CONTENT - 4-STAR DIET FOR YOUNG CHILDREN SPECIFICALLY (PART 2)	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
• Children should consume breast milk up to the age of 2, but the amount will decrease as children get older	• 11/13 (85%)
• As children get older, they will need to consume more and denser foods, adding snacks.	• 9/13 (69%)
Do the couple's facilitators show and ask the following questions in the picture below?	NA
Which food groups are present?	10/13 (77%)
How many meals and snacks are shown?	10/13 (77%)
How can the husband be supportive?	9/13 (69%)
Do the facilitators convey the following messages?	NA
• Meat, chicken, fish, milk, etc.	11/13 (85%)
• Corn, rice, millet, sorghum, potatoes, yams, cassava, etc.	11/13 (85%)
• Beans, lentils, soy, peanuts, etc.	11/13 (85%)
• Mango, orange, melon, watermelon, banana, papaya, carrots, tomatoes, etc.	10/13 (77%)

In most MFH sessions, the key concepts related to the 4-STAR diet for pregnant women were covered by facilitators, without any single topic more or less frequently covered than others (Table 49).

Table 49. Content fidelity for topics pertaining to the 4-STAR diet for pregnant women

PRESCRIBED MFH CONTENT - 4-STAR DIET FOR PREGNANT WOMEN SPECIFICALLY	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
Do facilitators ask participants what a pregnant woman should eat?	11 / 13 (85%)
Do facilitators ask participants why pregnant women need a diversified diet?	11 / 13 (85%)
Do facilitators convey the following messages about why pregnant women should consume diversified diets?	NA
• To meet the nutritional needs of you and your baby	10 / 13 (77%)
• To prevent iron deficiency in the blood or the birth of a low-weight baby	8 / 13 (67%)
• To prepare the mother for birth, breastfeeding and the baby's healthy development.	9 / 13 (69%)
Do the facilitators show the picture below and ask the following?	NA
• What do you see in this picture of a breastfeeding mother?	10 / 13 (83%)
• What food groups are present?	10 / 13 (83%)

PRESCRIBED MFH CONTENT - 4-STAR DIET FOR PREGNANT WOMEN SPECIFICALLY	% OBSERVATIONS WHERE MFH CONTENT WAS DELIVERED PER CURRICULUM
Do the facilitators say that nursing mothers should eat the same diversified diet as pregnant women?	NA
• Animal-rich foods (meat, chicken, fish, liver, eggs, etc.)	10 / 13 (77%)
• Staple foods (cereal grains, tubers, potatoes, yams, yellow sweet potatoes)	11 / 13 (85%)
• Pulses and nuts (peanuts, sesame, soy, peas, cowpeas)	11 / 13 (85%)
• Fruits and vegetables (mango, orange, dark green leaves, carrots, watermelon, cabbage, onion, eggplant)	11 / 13 (85%)
Do couple facilitators emphasize the main difference in diet between pregnant and breastfeeding women?	9 / 13 (69%)
Do facilitators ask participants why breastfeeding women need a diversified diet?	10 / 13 (77%)
Do couple facilitators convey the following messages about the importance of a diversified diet for breastfeeding mothers?	NA
• Covers the nutritional needs of both the breastfeeding mother and her baby	9 / 13 (69%)
• Helps the nursing mother produce enough milk to feed her baby	10 / 13 (77%)
• Produces good milk that will help the baby grow and be healthy	9 / 13 (69%)
Do facilitators ask participants about the simple steps needed to increase access to nutrient-rich foods for pregnant and breastfeeding women and children under 5?	10 / 13 (77%)
Do facilitators convey the simple actions required to increase access to nutrient-rich foods for pregnant and breastfeeding women and children under 5?	NA
• Male partners can help mothers breastfeed to meet their child's needs.	9 / 13 (69%)
• Build a vegetable garden to grow foods that provide different nutrients	9 / 13 (69%)
• Include complementary foods by purchasing infant flours and porridges enriched locally in the household with eggs, liver or meat.	9 / 13 (69%)
• Monitor children's growth, with strong involvement of mothers.	9 / 13 (69%)
• Plan a family budget that increases the number of nutritious foods available for consumption at home, especially by pregnant, breastfeeding and/or adolescent women and children under 5 years of age	9 / 13 (69%)

Fidelity of MFH session facilitation/delivery. Nearly all (98%) MFH participants, with similar agreement between husbands and wives, reported ‘high’ or ‘very high’ levels of satisfaction toward MFH facilitation in four primary domains (Table 50).

Table 50. Husband and wife satisfaction levels toward MFH facilitation

SPECIFIC HUSBAND AND WIFE LEVEL OF SATISFACTION DOMAINS	HUSBANDS (N = 290)	WIVES (N = 290)
The facilitator of MFH was very knowledgeable about couples’ communication and joint decision-making		
Strongly agree/agree	288 (99%)	288 (99%)
Disagree/strongly disagree*	2 (1%)	2 (1%)
The actions of the facilitator were appropriate during MFH sessions		
Strongly agree/agree	290 (100%)	289 (99%)
Disagree/strongly disagree*	0 (0%)	1 (1%)
I felt welcome in my MFH group meetings.		
Strongly agree/agree	290 (100%)	288 (99%)
Disagree/strongly disagree*	0 (0%)	2 (1%)
I felt that I was able to speak up (or give advice, or make suggestions,) during my MFH group meeting.		
Strongly agree/agree	286 (98%)	282 (97%)
Disagree/strongly disagree*	4 (2%)	8 (3%)

*Includes ‘neutral’ responses

Observing MFH facilitation. Direct observations of 39 MFH sessions indicated a positive assessment of MFH facilitation, including 84% of sessions rated as having overall ‘good’ or ‘excellent’ facilitation quality (>7 points on a 10-point rating scale). Just 8% of the observed sessions were rated as ‘passable to mostly well’ (5 – 6 points) and also 8% rated as ‘insufficient’ (0 – 4 points). More specifically, most MFH facilitators actively engaged participants, allowed questions to be asked, and had a good rapport with couples during the observed sessions.

“*The facilitator delivers the MFH sessions very well. He has the art of conveying the message and he involves the participants in the sessions.*”

— MFH OBSERVER, FIELD NOTES

The table below summarizes the number of MFH sessions where specific aspects of positive facilitation quality were observed (Table 51).

Table 51. MFH facilitation fidelity based on direct observations

FACILITATION FIDELITY QUESTIONS POSED TO OBSERVERS OF MFH SESSIONS	NUMBER OF MFH SESSIONS WHERE EACH ITEM WAS OBSERVED (N = 39)
Were the observed coupled engaged most of the MFH session?	35 (89.7%)
Did the facilitator allow questions to be asked during the MFH session?	35 (89.7%)
Did the MFH facilitator have a good rapport with the participants?	37 (94.8%)
Did the MFH facilitator attempt to involve all participants in discussions and activities?	37 (94.8%)

In addition, nearly all MFH facilitators appeared ‘completely’ (74%) or ‘adequately’ (13%) prepared during observed sessions. Just 8% were observed to be ‘partially’ prepared, with the remaining 5% not prepared at all. Facilitator enthusiasm was also rated highly, with 85% and 15% of observed facilitators rated as being ‘very enthusiastic’ or ‘somewhat enthusiastic’, respectively.

In the MFH sessions where preparation and enthusiasm were rated lower, observers explained that literacy challenges may have been limiting the quality of facilitation.

“*The two facilitators do not know how to read correctly. The facilitators are not well prepared and have gaps in their reading.*”

— MFH OBSERVER, FIELD NOTES

Just 8% of the 39 observed MFH sessions were given an overall ‘insufficient’ facilitation rating. Interviews with MFH facilitators indicated that they were just following the facilitation instructions that they learned during their training. They described aiming to deliver MFH content thoroughly enough to ensure participant comprehension. The illustrated flip charts provided to facilitators helped them to convey MFH session content, especially among a participant base with varying levels of literacy. In addition, facilitators explained taking liberties to further tailor MFH sessions to the cultural context of rural Niger, for example by incorporating local customs and religious elements (e.g., Quranic verses) into the activities. The GIRMA program also provided mats, kettles, visibility outfits for men (‘boubous’) and women (hijabs), small bags, and other context-specific materials to help ensure MFH sessions were appropriate for this context (MFH Annual Report, FY 2021). Interview data with both facilitators and participants suggest that such tailoring helped improve MFH participant satisfaction and acceptability, which were primary strengths of MFH implementation in this context. The following section describes participant acceptability in more detail.

Acceptability

Acceptability can be described as the extent to which a program is perceived as suitable, satisfying, or attractive by its intended audience. It helps in understanding the factors that influence participation and adherence to the program.

Facilitators explained the MFH sessions to be appropriate for and acceptable to participating couples who, “...love the MFH sessions.”

“ Yes, thank God, MFH is accepted by our community. Because we have all accepted it, and many want to participate... Even our parents now want to be MFH participants, because they have realized that MFH is important for life within couples.”

— INTERVIEW RESPONDENT, HUSBAND

Endline survey data corroborate this finding, as satisfaction with MFH participation was universally positive with fewer than 5% of couples who would not recommend MFH to their neighbors (Table 52).

Table 52. Satisfaction with MFH participation among husbands and wives

MFH SATISFACTION SURVEY QUESTIONS	HUSBANDS (N = 290)	WIVES (N = 290)
I am satisfied with my participation in MFH		
Strongly agree/agree	288 (99%)	288 (99%)
Disagree/strongly disagree*	2 (1%)	2 (1%)
Participation in MFH was worth my time and effort.		
Strongly agree/agree	270 (93%)	268 (92%)
Disagree/strongly disagree*	20 (7%)	24 (8%)
I would recommend participating in MFH to my neighbors		
Strongly agree/agree	280 (96%)	279 (96%)
Disagree/strongly disagree*	10 (4%)	11 (4%)

*Includes ‘neutral’ responses

Cultural tailoring of MFH. CRS adapted *Maison Familiale Harmonieuse* (Harmonious Family Home) to the local cultural and religious context of Niger in collaboration with the Islamic Medical Association of Uganda. To do so, the MFH curriculum was

re-named to *Maison Familiale Islamique* (Islamic Family Home). Interviews with both MFH facilitators and participants indicate that doing so was a primary reason why participant satisfaction and acceptability levels were so high among MFH couples who represented both Hausa and Fulani cultural groups.

“ When they started studying, they saw that it is not a new thing or a new religion. It is the religion [Islam] they know.”

— MFH FACILITATOR

“ The reasons why MFH has been accepted in our Hausa environment are that MFH teachings do not go against our culture or religion. Rather, it teaches [us] about life as a couple.”

— INTERVIEW RESPONDENT, HUSBAND

MFH participants explained that the MFH teachings and activities do not contradict their religious beliefs, but instead complement them.

“ The MFH encountered some difficulties at the beginning because of our ignorance...we thought that these [programs] were new things they [implementers] wanted to introduce into our society. But after a few sessions, we were able to clarify the objectives of the MFH. And what contributed to its acceptance in the village were the Islamic aspects it contains.”

— INTERVIEW RESPONDENT, HUSBAND

Relevant MFH lesson content. In addition, participants appreciated the relevance of MFH lessons that were reflective of their own core cultural values grounded in religious practice, social norms, and family/relationships.

“ The fundamental reason is that MFH's activities reflect the reality of our households and even the examples of the different modules we study during the sessions.”

— MFH FACILITATOR

Interview participants explained that MFH lessons that, for example, focused on achieving a harmonious family life, mutual understanding, and effective communication were topics that resonated with them and even contributed to positive changes in their relationships.

Participating husbands more commonly pointed to religion and family life as attractive MFH topics whereas wives were more apt to recall those pertaining to personal health, for instance birth spacing and natural family planning techniques.

“*The aspects that I appreciated were the fight against malnutrition, hand washing and birth spacing. There’s nothing I didn’t appreciate. Because all we have...is our health.*”

— FOCUS GROUP, WIFE

Participants valued the lessons on identifying and utilizing nutrient-rich foods, as well as those focused on disease prevention. Facilitators indicated that the new nutrition module still faces acceptability challenges, as both availability and access to certain nutritious foods promoted in MFH lessons (e.g., moringa, eggs, meat and other animal-based foods) remain low for many families.

“*The challenges associated with the new nutrition module once it has been rolled out are the unavailability of products in the village. As a result, participants are not placing enough importance on certain parts [of the module].*”

— MFH FACILITATOR

As a result, facilitators explained that some level of skepticism, and reluctance to adopt the new nutritional recommendations, remains among MFH couples.

Community engagement and peer support. And third, both facilitators and participants ascribed high MFH acceptability also to its strong community engagement and peer support aspects. One respondent explained that when she had left MFH sessions and returned to her village, she would receive reminders and encouragement from others to apply the lessons learned from previous sessions. The social nature of MFH activities has helped build enthusiasm, commitment, and support among a greater number of community members over time as acceptance levels have continually improved from the beginning when acceptance was more variable.

“*That’s because at first they thought it was a religion imported from elsewhere, and they also thought it was an activity that only benefited people from CRS.*”

— MFH FACILITATOR

Facilitators reported that community members were initially resistant to MFH due, in part, to the misconception that the program was only benefiting CRS and would be trying to impose other religious values/lessons than those practiced in this rural Niger setting.

Some practical challenges, such as the need for husband and wives to attend and sit next to one another, also hindered initial MFH acceptability. While some participants suggested separating men and women during MFH sessions to improve cultural appropriateness, others highlighted the importance of active participation from both men and women for fostering a sense of collaboration and shared responsibility.

“As participation in the MFH sessions requires the presence of the couple, in the event of forgetting or not respecting the MFH lessons, your partner will call you to order.”

— MFH FACILITATOR

Some participants also pointed to domestic responsibilities that sometimes made it difficult for both husbands and wives to attend every MFH session together.



Photo by Michael Stulman for CRS

Recommendations

Recommendations in this chapter were generated by a combination of inputs from in-country and regional stakeholders during a participatory workshop where findings were presented for validation. In addition, recommendations were developed based on the research and implementation team member inputs during the analysis and synthesis stages of this program evaluation. Finally, qualitative interviews and focus group discussions asked program participants and MFH implementers to offer their recommendations for improving programming. The recommendations below are a summary of the combined inputs across these data sources and participant types.



Recommendation 1

Enhancing the intensity, or dose delivered, of complementary livelihood activities delivered may help participants overcome food security-related barriers currently limiting nutrition-related behavior change.

Greater investment in and support of complementary agricultural activities.

Stakeholders and participants recommended integrating more, and a greater intensity of, agricultural and economic development activities into current program activities. For participants to carry out the desired behavior changes focused on improving diets, data suggest that additional resources are needed in the face of 2022 agricultural shocks, as well as while living in extreme poverty conditions. An MFH facilitator explained that, *“...in short, if agro-pastoral production is not improved, then we will not have the nutritious food that we are talking about...”* More intense coupling of agricultural development and animal husbandry activities with nutrition education may help improve access to the nutritious foods being promoted.

“ If a new project were designed in the same context for improving food security and nutritional outcomes, it should have a stronger agriculture and livelihoods-related component.”

— CRS NIGER PROGRAM TEAM, STAKEHOLDER WORKSHOP

Moving forward, the project team may consider using additionally provided resources not to expand the reach and coverage of activities but instead to enhance their intensity among a smaller number of targeted beneficiaries. Doing so may increase the per capita benefits of program participants, as resource dilution may have contributed to the modest effects of program impact observed during this evaluation.

Overcoming the knowledge and behavior impasse through livelihoods re-design.

There are many intermediate factors that should contribute to the improvement of diet diversity, including caregiver attitudes, normative views, and intention for instance. However, the best intentions are limited by contextual factors including nutritious food access, agricultural yields, financial inaccessibility, among others.

Greater encouragement for and provision of resources for homestead food production and animal husbandry may help those households wishing to access more diverse food items to do so in the face of far distances and costly travel to markets.

Greater program emphasis on income-generating activities for improved economic access. Participants recommended the need to have more income-generating activities that would help them to increase their household savings, more practically allow for budgeting, and be able to apply nutrition and decision-making lessons taught during program sessions.

“*My recommendation is to strengthen the [economic] capacity of couples, because a household that has nothing cannot make a decision [dietary or otherwise].”*

— MFH FACILITATOR, INTERVIEW

Evaluation findings suggest that the nutrition knowledge of caregivers may have been adequate for understanding the benefits of consuming/feeding diverse diets, but scarce resources constrain access and limit choice.

“*The key considerations for MFH expansion are to ensure that the program speaks to the realities of society and the interests of the population. Also, include in the program the learning of income-generating activities to encourage participation. [...] Sewing, processing agricultural products...*”

— MFH FACILITATOR, INTERVIEW

However, capacity building in non-agriculture-based options in rural settings has been explored by CRS programs before and has faced challenges in identifying a diverse set of options, so its limitations should be carefully considered.

“*In making this recommendation, it's important to consider some of the limitations with non-agriculture-based entrepreneurship or employment options in the rural locations we are working in.*”

— CRS TEAM, STAKEHOLDER WORKSHOP

Enhancing the intensity (i.e., dose) of activities focused on capacity building and financial assistance in agriculture-based options could include but should not be limited to providing fertilizer (Note: locally produced compost is currently encouraged in programming) and additional trainings focused on climate-resilient agricultural strategies to improve yields.

“ If you have one hectare and no fertilizer, it is hard for you to produce more than three bales. But if you have fertilizer, then you are going to produce a lot and you do not have the money for fertilizer. In short, if agro-pastoral production isn't improved, we won't have the nutritious food we're talking about.”

— MFH FACILITATOR, INTERVIEW

While the tailoring of Care Groups and MFH curricula to the cultural context of Zinder region in Niger was said to be a primary strength of programming, implementers recommended additional tailoring to the economic realities that households face every day. For example, the nutrition education curriculum may promote not just one set of foods for all households, but instead offer different, yet nutritionally similar meal options for households across the economic spectrum.

In addition, enhancing program intensity with a stronger interpersonal focus on the extended family and their role shaping maternal and child diets may help the program meet its primary outcome objectives in this setting. Tailored programming to more explicitly address the indirect, yet prominent influences of community leaders, such as elders, on maternal and child diets may offer an opportunity for behavior change. In addition, given the limited effects of SILC + CARE (I1) and SILC + CARE + MFH (I2) on the knowledge and intentions of men, revamped programming may consider what combination of behavior change strategies that have worked in other similar settings may enhance the involvement, participation, and impact of program activities on males in particular. While males/husbands were targeted as program participants during MFH activities, they were not exposed to nutrition messaging through other modalities to the extent planned in original project design.



Photo by Hadjara Laouali Balla for CRS



Recommendation 2

Including deliberate strategies to improve recruitment and participation rates across layered activities may help ensure an adequate programming dose is received for desired behavior change.

Improved layering and coordination across different program modalities. Internal program monitoring data suggest that MFH activities may have improved joint decisions between husbands and wives. However, precise participation benchmarks (e.g., 50%) to effectively do so remains unknown. Establishing strategic and data-informed recruitment and participation thresholds during program design may help both implementers to reach benchmarks and evaluators to better understand program fidelity. There is a need for improved layering and coordination between MFH, SILC, Care Groups, and other CRS activities to enhance participation rates, which could be achieved by harmonizing recruitment strategies, facilitating joint outreach, and regularly evaluating the success of this integrated approach. Consider more effective behavioral strategies to better recruit and integrate a given couple in all three program activities to ensure more harmony across approaches for combined impacts.



Recommendation 3

Developing a revised and more guiding Theory of Change with clear outputs, outcomes, and impacts mapped onto nuanced program impact pathways to guide programming may improve implementation and evaluation efforts moving forward.

The original Theory of Change used to guide implementation and evaluation lacked clearly stated program outputs (i.e. process indicators) and outcome pathways that may benefit from more nuance using findings from this evaluation and other rich monitoring reports produced since Girma commenced in 2018, including the CRS Gender Analysis Report (CRS, 2020). Social and behavior interventions in public health have become increasingly complex in the past several decades, and thus require mirrored complexities in planning, implementation, and evaluation activities guided by detailed theories of change/program impact pathways (Kim et al., 2011; Linnan and Steckler, 2002; Sharma et al., 2021).

Improved monitoring of program implementation may result from more precise output mapping stemming from the three core SILC + CARE + MFH activities, without which subsequent process and impact evaluations may present challenges. In addition, the guiding Theory of Change combined several psychosocial outcomes (e.g., improved knowledge/attitudes) into single outcome variables along key pathways. Doing so may have helped to create a simplified Theory of Change but may have proved less useful for considering activities to improve either attitudes or knowledge, as in the example above. And for evaluation purposes, it is possible to see program improvement in knowledge, but not attitude (and vice versa), yet the current model does not include such nuance. With two years of programming remaining, revisiting the original Theory of Change and updating it with specificity and detail through a co-creation process may serve as a useful blueprint for improved implementation and evaluation in years to come.

Study Strengths and Limitations

Study Strengths

- This evaluation study was based on a longitudinal, quasi-experimental design of a large sample that included the husband, the wife, and one child from each surveyed household. The design allowed us to examine and compare the pre- and post-intervention effects by individual participant type. This design included a control group, and two intervention modality groups, namely I1 (SILC + CARE) and I2 (SILC + CARE + MFH). With careful comparison using the difference-in-difference statistical approach, we were able specifically investigate the layered effect of I1 vs Control, the combined effect I2 vs Control, and the layered effect of MFH modality alone (comparing I2 vs I1) on maternal and child nutrition outcomes.
- The theory-driven evaluation design, inclusive of an embedded process evaluation, was a primary strength of this evaluation, as the combination of numerical and textual data generated from a variety of data collection methods provided a detailed picture of not only what program outcomes occurred but also *why* and *how* they were achieved (Chen, 1997; Rao & Woolcock, 2003). Without the embedded process evaluation, we would not have known that the lack of dietary improvement at endline relative to control could be, at least partially, explained by sub-optimal program participation and attendance across the layered program arms.
- The evaluation approach utilized standardized methods and measures to assess nutritional and behavioral outcomes of interest, including the use of globally recognized diet diversity scores, for example. Using standardized and globally recognized measures allowed for comparison of results from this program and setting to others with similar characteristics globally (Kennedy et al., 2007; WHO, 2010).
- Multiple forms of methodological triangulation were utilized in this evaluation. Triangulating the different data sources provided a more comprehensive understanding of findings, including purposive sampling of different participant types who shared their unique experiences from both beneficiary and implementer perspectives (Suri, 2011). We also triangulated analytic approaches by examining the same data sets using a combination of statistical and qualitative techniques (Heale and Forbes, 2013). Doing so allowed for a more credible understanding of the program effects and pathways to impact (Patton, 1999). Using a mixed methods toolkit for this evaluation ensured that data were collected not only through participant self-report but also through direct observations of target behaviors of interest (Bernard & Gravlee, 2014). What people say and what people do can be at odds with each other, particularly when evaluating health and nutrition behaviors.

Study Limitations

- The loss of randomization and use of a quasi-experimental design due to early roll-out of MFH may have introduced potential selection bias in the intervention area, which resulted in differences in sociodemographic characteristics among groups. However, we accounted for the statistical differences by adjusting for a propensity score between I1 and I2 in our analyses (Caliendo and Kopeinig, 2008).
- The control group was selected outside of the program I1 and I2 areas in another district. The lack of census data and program data in Niger prevented us from matching the control villages with the program villages as precisely as we would have liked. Although we collected program implementation data in the control area to match our intervention distribution, we still found sociodemographic differences among the control and the two program groups. Differences in sociodemographic characteristics among groups were adjusted for during statistical analysis.
- The use of survey data to understand primary outcomes of interest, namely the dietary outcomes and the typical weekly savings from SILC groups, may have been affected by participant recall bias (Shim and Kim, 2014). To reduce the effects of seasonality on dietary outcomes, the baseline and endline surveys were conducted at the same time in subsequent years. And because the reported median typical weekly savings from SILC groups aligned with program design expectations, as well we were corroborated by qualitative data sources, we do not have hesitations reporting the savings-related findings in their current form. In summary, we put into place several research strategies to help give us confidence in the overall validity of primary outcomes despite the possibility of recall bias.
- The urge of participants to provide socially desirable answers with the perception that doing so may have resulted in additional programming or development aid is a possibility during all forms of data collection (Chung and Monroe, 2003). Through multiple forms of triangulation, we sought to reduce the effect of possible social desirability bias on credibility of findings.
- Direct observations were conducted as one method to assess mealtime behaviors and MFH session implementation. While direct observations allow for an understanding of real-time behaviors, it is possible that participants (both household members and MFH facilitators) modified their behaviors in the presence of others and threatened study validity (Gittelsohn, 1997; Haynes and Horn, 1982). To reduce such reactivity, we conducted unannounced observations, a strategy that has been used in similar public health nutrition studies to assess household-level behaviors (Harvey, 2018; Kodish et al., 2022). In addition, we triangulated observational findings with other data sources stemming from qualitative interviews, focus group discussions, and observational field notes, in particular. These strategies are documented ways to reduce reactivity during observational methods used in a nutrition program evaluation such as this one (Harvey, 2018).
- Multiple languages were used across the study design, data collection, analysis, and interpretation phases of this evaluation. Specifically, data collection instruments were developed in English and translated into French for fieldwork. However, during fieldwork, questions were posed in Hausa and then recorded in French. It is likely that some level of contextual meaning and details were lost in the translation from Hausa to French and English for analysis and interpretation. Qualitative data were digitally recorded and translated verbatim, a process which

we believe helped retain important nuance that may have otherwise been lost (Irvine et al., 2007).

- Due to budgetary and logistical constraints, as well as initial IT and connectivity issues, qualitative data collection occurred within a narrow time frame and experienced significant upload delays. These delays limited the ability of the research team to evaluate qualitative transcripts in real time and prevented course correction during much of fieldwork. Despite a re-retraining of qualitative data collectors during fieldwork, the qualitative transcripts and associated field notes were not as rich and detailed as we would have liked.
- The qualitative data collection focused on understanding process measures was also hampered by similar operational constraint, resulting in a lack of iteration that had been originally designed to allow such findings to fully explain survey results and secondary data such as attendance/participation. In reality, both statistical and textual data sets were collected and analyzed almost concurrently, after the period when further data collection was no longer possible. As a result, this evaluation generated some findings that also resulted in new questions which could not be further answered (e.g., specific reasons why Care Group attendance was so low) without additional primary data collection.

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