

Is participation in Care Groups associated with enhanced diet quality amongst women and children? Experiences from Zimbabwe

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Disclaimer

The **views** and opinions of the authors expressed herein **do not** necessarily state or **reflect** those of **USAID** or the United States Government.

Abstract

The Amalima program, a United States Agency for International Development (USAID) Office of Food for Peace intervention, has been promoting Care Groups from 2014 to 2020 in a resource constrained setting in Zimbabwe. Care Groups are community-based peer-to-peer support groups for mothers, which provide a platform for promoting recommended maternal, infant and young nutrition practices. The researchers conducted a study to compare the quality of the diet for children and mothers participating in Care Groups and children and mothers not participating in Care Groups. The research was conducted in two districts (Gwanda and Tsholotsho) in Zimbabwe across 8 purposively selected sites, six years after project implementation began. A total of 242 children aged 6 to 23 months and 168 women beneficiaries were included in the study. We analysed consumption of the three non-staple food groups promoted by the Care Groups under the theme 'Four Star Diet' namely vegetables and fruits, legumes and animal source foods. Our results showed that children whose caregivers were members of Care Groups had a higher consumption of pulses and legumes (29% vs 1%; $p = 0.00001$), fruits and vegetables (33% vs 18%; $p = 0.00104$) and animal source foods (59% vs 26%; $p = 0.00001$) compared to children whose caregivers were not Care Group members. There was no difference in diet quality between women participating or not participating in Care groups. Efforts should be put in place to increase participation in Care Groups, as they serve as a key contact point to support recommended infant and young child nutrition practices during the first 1000 days of life. There is a need to explore barriers to Care Group participation and develop a strategy to address the barriers for non-Care Group participants. Future programs should explore the reasons behind the limited impact that Care Group attendance had on the diet quality for women.

Introduction

Malnutrition in childhood has many adverse consequences for child survival and long-term well-being. It also has far-reaching consequences for human capital, economic productivity, and national development overall. Zimbabwe is a country that ranks 121st out of 157 countries in terms of its progress toward meeting the Sustainable Development Goals (Sachs et al., 2017). The 2010-2011 Zimbabwe Demographic Health survey showed that 32% of children under five were stunted, 3% were wasted, 10% were underweight, and 6% were overweight (ICF, 2012). According to the 2018 National Nutrition survey, the prevalence of stunting had decreased to 26.2% which is still considered high according to global standards (Food and Nutrition Council, 2018; de Onis et al., 2017). The Amalima program's final evaluation showed a reduction in the chronic malnutrition rate by 7.2 percentage points from 31.7% at baseline to 24.5% at endline (IMPEL, 2020).

In addition, only 4% of children 6 to 23 months were fed a minimally acceptable diet (defined by WHO as the proportion who receive both a minimum dietary diversity and meal frequency) during the previous 24 hours, indicative of poor infant and young child nutrition (IYCN) practices. Key interventions that have proven to be effective include increasing the diversity of the diet. Dietary diversity is a qualitative measure of food consumption that reflects household access to a variety of foods and is also a proxy for nutrient adequacy of the diet of individuals. The

importance of dietary diversity is based on several studies that have shown that diverse diets are accompanied by positive health outcomes (Kant et al., 1993; Michels and Wolk, 2002).

The present article evaluates the Amalima program's experience in Zimbabwe in improving dietary diversity using the Care group approach for improved maternal, infant and young child nutrition (MIYCN).

The Amalima program

Amalima is a Ndebele (local language) word for the social contract by which families come together to help each other engage in productive activities, such as land cultivation, livestock tending, asset building, and development initiatives. The Amalima program aimed to improve household access to and availability of food, community resilience to shocks, and nutrition and health among pregnant and lactating women as well as and boys and girls under the age of two.

The Amalima program, a United States Agency for International Development (USAID) Office of Food for Peace intervention, is a seven-year Development Food Security Activity (in Zimbabwe, it ran from 2013 to 2020) whose goal has been to improve household food and nutrition security. The program was implemented by Cultivating New Frontiers in Agriculture (CNFA, the prime organisation), International Medical Corps, The Manoff Group, Organization of Rural Associations for Progress (ORAP), Africare, and Dabane Trust in four districts (Bulilima, Mangwe and Gwanda in Matabeleland South and Tsholotsho in Matabeleland North). These four districts are in

agro-ecological regions 4 and 5, which are prone to low rainfall patterns and consequently are largely food and nutrition insecure. Amalima aimed to improve household food and nutrition security through three Strategic Objectives, namely improved:

1. Household access to and availability of food
2. Community resilience to shocks
3. Nutrition and health among pregnant and lactating women and children under 2

International Medical Corps is the technical lead for the third objective, of which the key activities include implementing Care Group activities to promote the adoption of key recommended maternal, infant and young child nutrition practices.

Care Groups are participatory community level nutrition education groups consisting of up to ten members (pregnant or lactating women and caregivers of young children) that meet on a regular basis. The Care Groups are implemented in collaboration with Ministry of Health (MoH) staff. Figure 1 presents the structure of the Amalima program care group model at district level. Program Nutrition Officers (NOs) work in collaboration with MoH District staff to train and support program Field Officers (FOs) and MoH staff. The FOs and nurses train and support Care Group Volunteers (CGV) who support and mentor Lead Mothers (LM) who are lower level community-based volunteers. Each LM trains and supports up to ten mothers or caregivers through sharing key MIYCN messages each month, and conducts monthly home visits to Care Group member homes to offer tailored messaging and reinforce promoted practices. Care Groups have a multiplier effect, allowing the program to reach more beneficiaries at a low cost

(Perry et al., 2015). Key program indicators include number of LMs actively conducting Care Group sessions and number of mothers and caregivers reached through Care Groups. The program has over 400 CGVs, and over 1,700 LMs; the volunteers have reached up to 6,000 mothers and caregivers each month with key messages encouraging adoption of promoted maternal, infant and young child nutrition (MIYCN) behaviors.

Amalima Care Group model – district structure

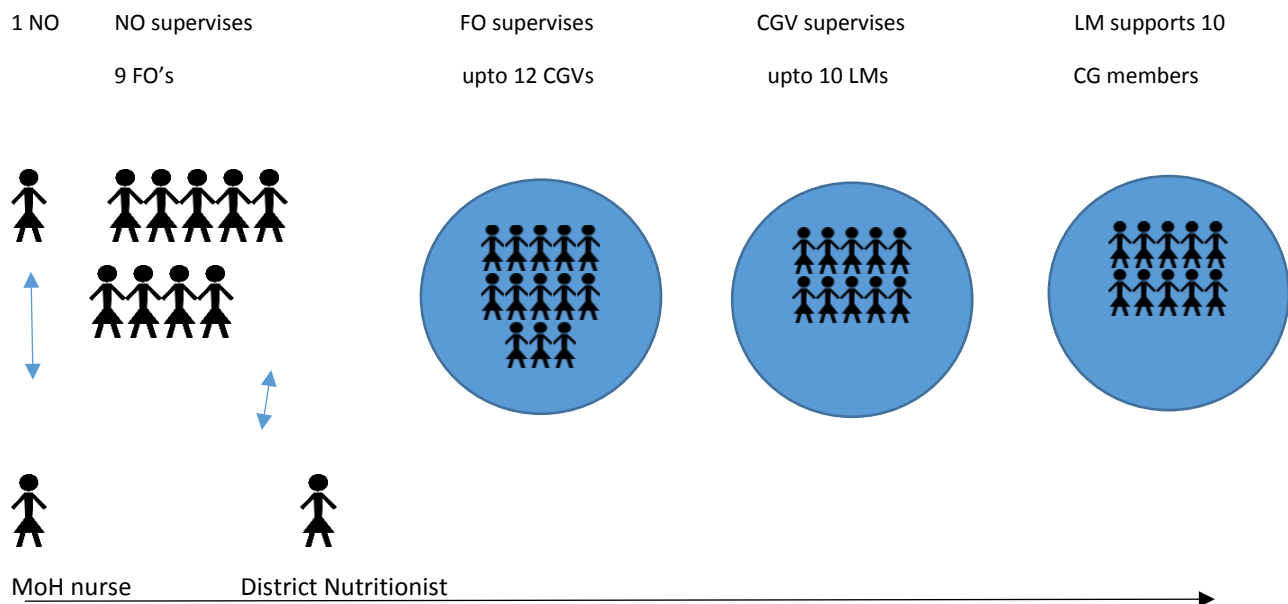


Figure 1: Amalima Care Group structure.

The Amalima program Care Group curriculum covers maternal nutrition, breastfeeding and child feeding as well as hygiene promotion. In addition, the Care Groups have been utilized as vehicles to deliver key trainings promoting the consumption of nutritious, locally available foods for improved dietary diversity.

The Amalima Care Groups have provided a platform for the promotion of dietary diversity of pregnant and lactating women as well as children 6-23 months through community level cooking classes which are held with mothers and caregivers to promote nutritious local available foods. Care Group participants also receive a recipe book to encourage the preparation of meals promoted during the cooking demonstrations. The Amalima Care Group experience is described in more detail in Ncube-Murakwani et al. (2020).

The Zimbabwe Ministry of Health promotes the consumption of a 'Four Star Diet' concept which was promoted in the Care Groups. This concept was developed by UNICEF and is aligned

to the food square and MyPlate concept which are tools to communicate dietary guidelines through understandable visual cues (USDA, 2012). The concept highlights that there are four food groups consumption of which is needed to create a balanced diet for children 6 to 23 months. These include:

- animal-source foods (meat, chicken, fish, liver), and eggs, milk and milk products;
- staples (maize, wheat, rice, millet and sorghum);
- roots and tubers (cassava, potatoes) legumes and pulses (beans, lentils, peas, groundnuts, sesame);
- fruits and vegetables, (mango, papaya, passion fruit, oranges, dark- green leaves, carrots, yellow sweet potato and pumpkin, banana, pineapple, watermelon, tomatoes, avocado, eggplant and cabbage) Some of these are rich in vitamin A and receive additional promotion.

A Four Star Diet ensures that a child or pregnant and lactating woman gets nutrients from the four main groups to contribute to improved MIYCN. The Care groups promoted consumption of the Four Star Diet for improved dietary diversity and quality with emphasis placed on the consumption of nutritious, locally available foods.

Research Objective

The primary objective of the study was to assess the influence of Care Group participation on dietary practices of pregnant and lactating women and children aged 6 to 23 months

The specific **research questions** for the study are outlined below:

- Does Care Group participation result in improved dietary diversity for children aged 6 to 23 months?
- Does Care Group participation result in improved dietary diversity for pregnant and lactating women?

Methods

Study sites and population

A cross-sectional study was conducted in two districts (Gwanda in Matabeleland South Province and Tsholotsho in Matabeleland North Province) and the researchers conducted cluster random sampling to select eight study sites (food distribution points) from a total of 59 program food distribution points. At the time of the study, the Amalima program had supported a total of 20,019 pregnant and lactating women and 29,489 children aged 6 to 23 months with supplementary food rations as part of the program's activities. During the month of June 2019, 11,510 children 6 to 23 months and 6,178 women received food rations and the data collection for this study took place in June 2019 during the supplementary food ration distribution exercise.

Based on the number of beneficiaries in the program, the study team established an ideal sample size using the following parameters on RAOSOFT; 90% confidence level, 5% margin of error at

50% response distribution. The target sample size for children 6-23 months was determined to be 265 while the target sample size for pregnant and lactating women was determined to be 260. At each food distribution point, all women and children (supplementary food ration recipients) were invited to participate in the study. A total of 1068 women beneficiaries (pregnant and lactating women) and caregivers of 242 children beneficiaries (children aged 6 to 23 months) were interviewed. Those who were members of a Care Group were assigned to the Care Group while those who were not members of Care Groups were assigned to the non-Care Group. The pregnant and lactating women and parents/care givers of the children included in the study gave their written consent after being given information on the purpose and practical issues of the study.

Data collection

The study collected dietary information from the respondents using a 24-hour dietary recall method where respondents (i.e. women and mothers/caregivers of children 6 to 23 months) were asked, by a trained researcher to precisely recall, describe and quantify the intake of foods and beverages consumed over the 24-hour period of the previous day, starting with the first thing eaten by the respondent the morning until the last food item consumed before he/she got up the next morning (FAO, 2018). Prior to data collection, all researchers underwent a 3-day training on the self-reported 24-hour dietary recall method (Gibson and Ferguson, 2008), consent acquisition, and ethics of conducting interviews. A semi-structured questionnaire was developed and pre-tested in Gwanda District, along with other research tools. Questionnaires were administered through face-to-face interviews. Data were collected by Amalima program technical staff who had previously conducted similar assessments within the Amalima program areas. Information was collected on the following characteristics: (i) the respondent's age and sex; (ii) the mother's age and education; (iii) feeding practices, including breastfeeding, consumption of food and beverages, and meal frequency. The researchers used the self-reported 24-hour recall method where interviewers asked about all foods, beverages and supplements that the children and pregnant and lactating women consumed on the previous day and recorded this information. Measurement aids such as spoons, cups and bowls were used to estimate the amount of foods and beverages consumed. Details about food ingredients of homemade foods or meals eaten out were also asked and recorded.

Analysis of data evaluating the diet diversity of respondents

The researchers collected information on foods consumed over the preceding 24 hours using the Food and Agricultural Organization/Food and Nutrition Technical Assistance (FAO/FANTA) recommended tool for dietary intake (Gibson et al., 2008). The self-reported 24hour dietary recalls are often used because they are quick, culturally sensitive, do not require high cognitive ability, and provide quantitative data on both foods and nutrients (Gibson et al., 2017). This method of dietary recall could only be considered partially validated in the study groups due to recall bias and imprecision associated with the methodology (Gibson et al., 2008).

The FAO/FANTA tool identifies 12 food groups for children and nine for women. After the information had been recorded it was consolidated by further summarizing each individual’s consumption into the four food groups recommended under the Four Star Diet. The Four Star Diet was used, as it aligns with the key dietary guidelines given via lessons that were delivered to Care group participants through the Lead Mothers Under the Four Star Diet approach each individual is expected to consume at least one of the four food groups over a 24 hour period The proportions of respondents consuming each food group were compared using a two tailed Z test at 0.01 level of confidence.

Results

Characteristics of the women and children included in the study

Data for 242 children were collected from mothers/caregivers, in addition to data from 168 pregnant and lactating women. Figure 2 presents a summary of the characteristics of children in the study, which shows that there were more males than females for the Care group members while there were more females than males for non-Care group members. Out of the data for the 242 children sampled, 101 mothers/caregivers (41.7%) were Care Group members while 141 mothers/caregivers (58.3%) were non-Care Group members. Figure 3 presents a summary of the characteristics of mothers/caregivers in the study, which shows that a higher number of Care group members were single compared to non-Care group members. Of the 168 women sampled 83 (49.4%) were Care Group members while 85 (50.6%) were not. Table 1 presents the educational status, of Care group and non-Care group members, comparing pregnant and lactating women with others. The results show that overall, pregnant and lactating women have a higher educational status than the caregivers and that that the pregnant and lactating women have a lower median age compared to the caregivers. The higher educational status of the pregnant and lactating women can be attributed to an increased drive for secondary education for girls in Zimbabwe in recent years (Zimbabwe National Strategic Plan for the Education of Girls, Orphans and Other Vulnerable Children, 2005-2010, 2004).

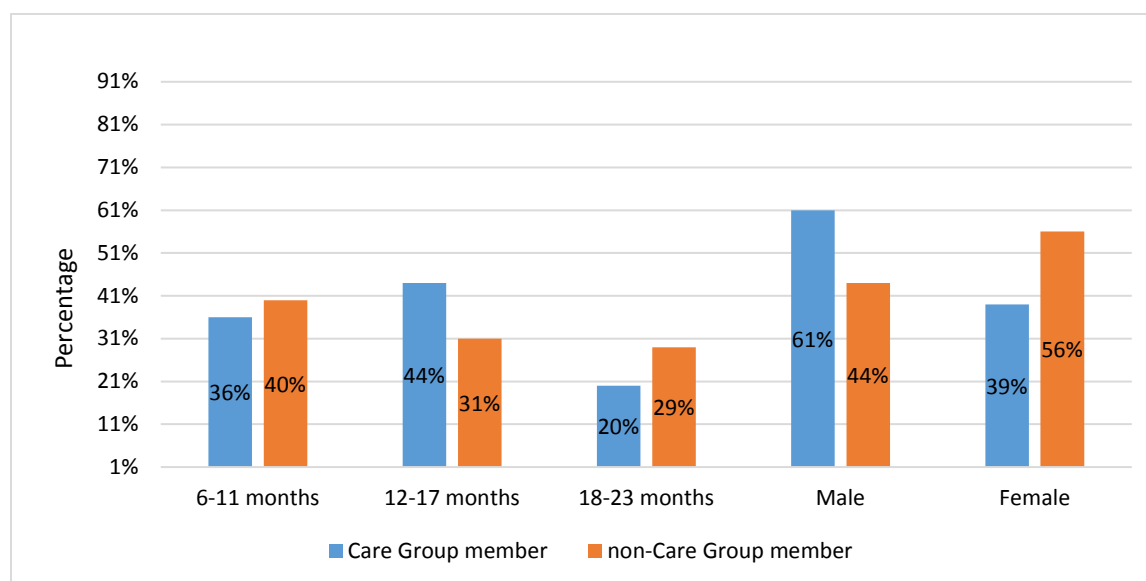


Figure 2: Age and sex of children in the study

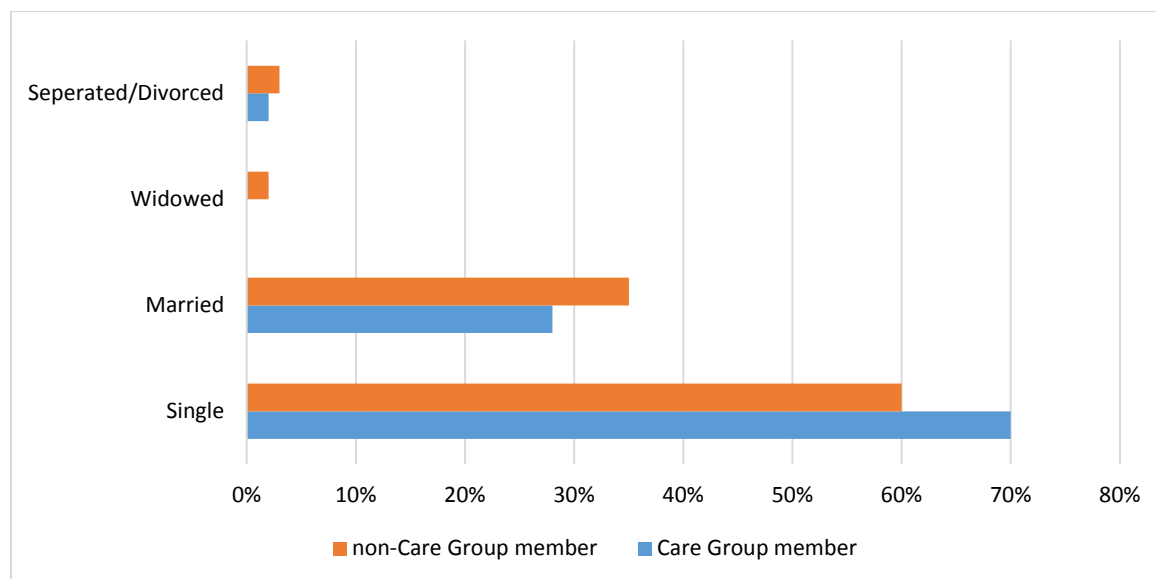


Figure 3: Marital status of caregivers in the study

Table 1: Educational background of caregivers and non-care group members, comparing pregnant and lactating women with others

Education attained	Caregivers		Pregnant and lactating women	
	Care group member (n= 101)	Non-Care group member (n= 141)	Care group member (n= 85)	Non-Care group member (n= 83)
None	0%	1%	0%	0%
Up to primary level	7%	26%	7%	6%
Secondary and above	93%	73%	93%	94%
Median age (years)	30.5	30.5	23.6	25.8

Quality of diet of children 6 to 23 months

Almost 100% of children sampled had been ever breastfed and 78% were still breastfeeding at the time of the study. As shown in Table 2, Care groups children had significantly higher consumption of the non-staple food groups in the ‘Four Star Diet’, with differences that were significant for fruits and vegetables, legumes and pulses, animal source foods and the Four Star Diet. The consumption of non-staple food groups was poor for all the children sampled and could be related to the prevailing food insecurity in the study areas. At the time of the study the national livelihoods assessment had placed both districts amongst the top 25 (of 59 total)

vulnerable districts in the country (Food and Nutrition Council, 2019). For those in Care Groups, there were 33% consuming fruits and vegetables, 29% consuming legumes and pulses, 59% consuming animal source foods and 11% consuming the Four Star Diet. For those not in Care Groups, there were 18% consuming fruits and vegetables, 1% consuming legumes and pulses, 26% consuming animal source foods and 1% consuming the Four Star Diet.

Table 2: Proportion of children 6-23 months consuming fruits and vegetables; legumes and pulses; animal source foods

Food Group	Care Group (proportion consuming)	Non-Care Group (proportion consuming)	P value
Staples	100%	100%	N/A
Fruits & Vegetables	33%	18%	0.00104
Legumes and Pulses	29%	1%	0.00001
Animal Source Foods	59%	26%	0.00001
Four Star Diet	11%	1%	0.00001

Quality of diet of pregnant and lactating women

As shown below in Table 3, the differences were not significant for the pregnant and lactating women for the consumption of fruits and vegetables, legumes and pulses, animal source foods and the Four Star Diet.

Table 3: Proportion of pregnant and lactating women consuming fruits and vegetables; legumes and pulses; animal source foods

Food Group	Care Group (proportion consuming)	Non-Care Group (proportion consuming)	P value
Staples	100%	100%	N/A
Fruits & Vegetables	69%	60%	0.242
Legumes and Pulses	54%	44%	0.16452
Animal Source Foods	24%	29%	0.242
Four Star Diet	16%	14%	0.6214

Discussion

Infant and Young Child Nutrition

The study used diet diversity as informed by the Four Star Diet concept as a measure of diet quality. Children of Care group members received a more diverse diet, as they consumed significantly more fruit and vegetables, legumes and pulses and animal source foods compared to children of non-Care group members. This finding is also similar to that of Rana et al. (2018), who found that more mothers participating in IYCF support groups in Vietnam reported that their child had received food from a minimum of four food groups during the 24 hours preceding the survey compared to a comparison group. Other studies have also demonstrated that participation in nutrition education programs can be effective to improve caregiver feeding practices and children's dietary diversity and the frequency by which they are fed (Ickes et al., 2017; Kushwaha et al., 2014).

Maternal Nutrition

Improved dietary diversity was not observed for pregnant and lactating women. This could be attributed to the fact that the Amalima Care group activities inadvertently placed more emphasis on promoting recommended IYCF practices, and not as much on maternal nutrition. Therefore, there is a need to promote strong social behaviour change messaging that emphasizes adoption of the recommended infant and young child feeding practices (consumption of a nutritious diet) even during pregnancy as the 'first 1,000 days' begins at conception. The findings also suggest that there could be challenges with pregnant and lactating women adopting recommended nutrition practices. There is a need to explore in depth the issues contributing to this challenge as they could be individual (pregnancy related, non-compliance by the women), household level (unsupportive household, food-related coping strategies) or related to the program (messages more tailored to infants and young children or messages not adequately addressing socio-cultural barriers).

The educational level of the pregnant and lactating women was overall somewhat higher than that of the caregivers. While this could imply an overall higher income, this seems unlikely because themselves the women in the care group did not consume more animal foods. Thus, their giving more animal foods, vegetables and legumes to their young children is likely an impact of care group education, not any existing differences in income or educational background.

Conclusions

There is growing evidence of the critical role played by Care groups in imparting knowledge, practices and skills for the adoption of key behaviours, particularly to rural populations in developing country settings. Although Care group members gained knowledge on nutritious locally available foods and how to prepare them through cooking demonstrations, the influence of socioeconomic aspects such as income constraints on food choices could have contributed to some of the differences that were not statistically significant.

The aim of this article was to establish whether or not there was an association between Care group participation and diet quality in the Amalima program areas. The Amalima program offered a unique opportunity to study these research questions, given the long period of the program implementation at scale. Our study has two key findings. Firstly, in the sample of pregnant and lactating women, participation in a Care group is not associated with improved or higher diet quality. Secondly, in the sample of children aged 6 to 23 months, participation of caregivers in Care groups is associated with improved or higher diet quality for the children.

However, it is key to consider confounding factors such as mother or caregiver education level or other socioeconomic differences as these were not controlled for in this study. In addition, this study suffers from the limitation that baseline data from before the project was implemented were not available.

Recommendations

The intervention should explore the reasons behind the limited impact that Care Group attendance had on the diet quality for women. The messages and intervention activities should address context-specific barriers to adopting recommended practices, which should be determined through barrier analysis. The intervention should promote messaging that emphasizes adoption of recommended IYCF practices (consumption of a nutritious diet) even during pregnancy, as the ‘first 1,000 days’ begins at conception.

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