



# Grandmothers as Change Agents: Developing a Culturally Appropriate Program to Improve Maternal and Child Nutrition in Sierra Leone

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## ABSTRACT

**Background:** Global recommendations on optimal maternal and child nutrition (MCN) practices are clear; however, there is limited literature 1) exploring how roles of family members influence those practices and on 2) designing programs accordingly. Researchers using a family-systems approach in the Global South find that grandmothers often play a vital role in MCN, yet most nutrition programs narrowly target mothers, thereby potentially limiting effectiveness.

**Objectives:** This article reports on the results of qualitative research exploring the roles and influence of family members on MCN in southern Sierra Leone, the local MCN beliefs and practices, and how those findings informed the design of a culturally appropriate program.

**Methods:** Focus group discussions (FGDs) were conducted with mothers, fathers, and grandmothers in 9 communities in Bonthe District, Sierra Leone. We used participatory tools to explore family members' roles and local MCN beliefs and practices. Interviews were recorded by notetakers and coded and analyzed using a content analysis approach.

**Results:** A total of 88 mothers, 125 grandmothers, and 79 fathers participated in the FGDs. All groups indicated that 1) grandmothers are the culturally designated advisors and supervisors of women on MCN issues and 2) mothers are not autonomous decision makers and are greatly influenced by grandmothers. The research identified both beneficial MCN practices and gaps between optimal and existing MCN practices—particularly related to maternal diet during pregnancy and exclusive breastfeeding for 6 mo. Research findings were used to design a grandmother-inclusive program.

**Conclusions:** Our research showed that mothers are embedded in a family system of caring and supervision where grandmothers have primary influence on MCN practices, clearly supporting the need for grandmothers to have a central role in community MCN programs. It also points to the need for increased use of a family-systems approach in designing public health nutrition programs. *Curr Dev Nutr* 2019;4:nzz141.

**Keywords:** grandmothers, family systems, community nutrition, behavior change, intrahousehold decision making

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Abbreviations used: EBF, exclusive breastfeeding/exclusively breastfed; FGD, focus group discussion; GMIA, Grandmother-Inclusive Approach; GML, grandmother leader; MCN, maternal and child nutrition; MOH, Ministry of Health; NGO, nongovernmental organization; WRA, women of reproductive age; WV, World Vision.

## Introduction

Scaling of 10 evidence-based maternal and child nutrition-specific interventions and practices could reduce stunting by 20% and save 900,000 lives, but challenges exist in the adoption of these practices (1). In many cultural contexts in the Global South, women of reproductive age (WRA) do not make independent decisions regarding the maternal and child nutrition (MCN) practices they adopt and instead are highly influenced by their families, including grandmothers. (In this article, the term “grandmother” is used in the African sense of the term to refer to all older women who have experience and who provide support to

children and mothers including maternal and paternal grandmothers, aunts, elder co-wives, and other kin and nonkin senior women in and around families.) (2–6). At the same time, most nutrition policies and programs in the Global South narrowly target the mother–child dyad and treat women as autonomous actors, giving limited attention to other members of the family, thereby potentially limiting effectiveness (7).

Recently, the WHO has called for increased use of formative qualitative research using a family-systems perspective to improve maternal and newborn health-promotion programs (8). Those using this approach in the Global South have found that grandmothers play a vital role in MCN (2–5, 9). However, grandmothers have received limited at-

tention in the design of MCN programs and instead are typically viewed as “barriers” to improved practices and unwilling to change, so their roles are minimized or excluded (2). In this article, we describe qualitative formative research that aimed to identify roles and influence of family members on MCN in southern Sierra Leone, local MCN beliefs and practices, and how the findings were used to design an innovative program targeting grandmothers as change agents, referred to as the Grandmother-Inclusive Approach (GMIA).

## Methods

### Setting and rationale

This project was led by the nongovernmental organization (NGO) World Vision (WV) and conducted in select rural, underserved communities of Torma, Bum Chiefdom, in the Bonthe District of Sierra Leone. At the time of the research, high levels of child malnutrition persisted in Sierra Leone: 38% of children <5 y of age were stunted, 9% were wasted, and 16% were underweight (10, 11). Less than one-quarter (22%) of infants were exclusively breastfed (EBF) to 6 mo and alarmingly few infants met minimum standards for diet diversity (14%) or acceptable diet (7%) (10). Given the nutrition landscape, the limited access to government services, and acknowledgement of family influences on MCN (12), WV wanted to develop a program that built on existing family roles in the local culture. A multidisciplinary research team conducted qualitative formative research using a family-systems research methodology developed by the Grandmother Project (13) to inform a quasi-experimental “proof-of-concept” trial of the GMIA. The trial, locally named the Mamanieva Project (“for our grandmothers” in the Mende language), was implemented from 2013 to 2017, with project interventions described below. Preliminary findings showed evidence of effectiveness of the GMIA for improving MCN practices (14–16), and full evaluation results are forthcoming.

### Formative research methodology

#### Objectives.

The qualitative research investigated both 1) the roles and influences of family members on MCN and 2) the cultural beliefs, attitudes, and practices related to MCN.

#### Sampling and participant eligibility.

The qualitative formative research was conducted using focus group discussions (FGDs) with mothers, fathers, and grandmothers in the project area. Nine communities were chosen, representing 3 levels of accessibility to the project office. In each community, a purposive sample was recruited from those who met the eligibility criteria for 1 of 3 groups: 1) women with children aged <24 mo, 2) grandmothers, and 3) men with children aged <24 mo. Eligible participants were approached by local contact persons, and those interested and willing to participate were included in the FGDs. The local collaborators also identified quiet and comfortable places for the groups to meet, often in courtyards or under a large tree.

#### Qualitative data collection and analysis.

In June 2013, the research team led by an anthropologist (JA) divided into 3 subteams and conducted semistructured FGDs with mothers,

fathers, and grandmothers over a 3-wk period. All team members (i.e., a Njala University nutritionist, 4 sociology students, and 3 WV staff), except for the team leader, spoke Mende. Prior to data collection, all team members participated in a 3-d training on qualitative data collection following the Grandmother Project’s “Focus on Family and Culture” methodology, which was subsequently formalized into a guide (13).

Separate focus group guides (see Supplementary material) were developed based on previous tools for each target group, including participatory activities (e.g., drawings, vignettes, voting) (13, 17, 18). Drawings of family members (e.g., pregnant women, grandmothers, fathers) were used in the FGDs to explore the roles of key family members related to family well-being and MCN. Vignettes presenting different MCN situations were discussed in focus groups to explore roles of family members and beliefs and practices in relation to 6 key MCN topics: 1) diet and workload of pregnant and lactating women; 2) breastfeeding practices; 3) complementary feeding; 4) responsive feeding practices; 5) feeding sick children; and 6) relationship between children’s food, growth, and health.

All FGDs were conducted in Mende and lasted between 90 and 120 min. During the FGDs, notetakers recorded participants’ responses in English. The interviews were not recorded and transcribed. Rather, the study team spent half of the time each day conducting FGDs and half of the time coding, discussing, and analyzing the notes in relation to the study objectives. The anthropologist led the process of manual color coding of the data and analysis using a content analysis approach (17). Analysis was organized around the 6 topics listed above. The anthropologist led the debriefing and analysis, and the notes were synthesized into written summaries. An iterative process was used, with initial findings used to improve the focus group guides to address incomplete or unclear responses.

All study procedures and tools were approved by the local review boards in Sierra Leone and the Institutional Review Board at Emory University. Government and community leaders from participating communities were engaged and informed of the research and the expectation of the participants. All interviewees provided written or verbal consent prior to participating in the FGDs.

## Results

### Roles and influences of family

A total of 88 mothers, 125 grandmothers, and 79 men participated in the FGDs. The research identified 2 overarching findings related to the first objective: 1) grandmothers are the culturally designated advisors and supervisors of women during pregnancy and of their newborns, infants, and young children; and 2) WRA are not autonomous decision makers and are greatly influenced by the advice and practices of grandmothers.

We found that most participants lived in multigenerational households where senior men and women were present and played critical roles as advisors and supervisors of younger generations. The complementary roles played by various actors related to MCN are detailed in Table 1. The roles identified were almost identical between the 9 study sites, suggesting that these communities have very similar cultural traditions and values regarding how families and communities are organized.

**TABLE 1** Roles of family and community groups related to maternal and child nutrition

Family and community groups	Roles related to maternal and child nutrition
Women of reproductive age	<ul style="list-style-type: none"> <li>Seen as implementers of daily tasks to support family life</li> <li>Carrying out domestic chores (e.g., food preparation, laundry, cleaning)</li> <li>Caring for husbands and mothers-in-law</li> <li>Giving birth to children</li> <li>Caring for children (e.g., feeding, care of sick child)</li> <li>Carrying out income-generating activities</li> <li>Farming (e.g., cultivating cassava)</li> </ul>
Grandmothers	<ul style="list-style-type: none"> <li>Seen as experienced and authoritative advisors and coordinators of family life</li> <li>Advising and caring for women during pregnancy and delivery</li> <li>Caring for newborns and young children</li> <li>Advising and coaching on breastfeeding</li> <li>Preparing meals for and feeding of young children</li> <li>Managing and participating in domestic tasks</li> <li>Carrying out income generating activities</li> <li>Providing the family “bank” in times of need</li> <li>Passing on traditional values and knowledge</li> <li>Promoting family cohesion</li> <li>Protecting the house and the family</li> <li>Advising all family members on numerous aspects of family life</li> <li>Maintaining peace in the home</li> </ul>
Fathers	<ul style="list-style-type: none"> <li>Seen as family providers</li> <li>Providing resources for family functioning and well-being</li> <li>Promoting family cohesion</li> <li>Caring for wives and children</li> <li>Caring for parents and in-laws</li> <li>Ensuring the security of the family</li> </ul>
Grandfathers	<ul style="list-style-type: none"> <li>Seen as wise family advisors</li> <li>Advising on major family decisions and problems</li> <li>Educating family members on moral and cultural values</li> <li>Caring for grandchildren &gt;5 y of age, especially boys</li> <li>Ensuring care and maintenance of the house and compound</li> </ul>
Elder daughters	<ul style="list-style-type: none"> <li>Seen as apprentices</li> <li>Carrying out household chores</li> <li>Assisting in caring for young children (&gt;1 y of age)</li> <li>Learning how to carry out all activities expected of young women later in life</li> <li>Following the orders of parents and grandparents</li> </ul>
Health workers such as midwives, nurses, community health workers	<ul style="list-style-type: none"> <li>Seen as trained health care providers</li> <li>Providing check-ups and advice to pregnant and lactating women about nutrition, exercise, and personal hygiene</li> <li>Giving iron supplements to pregnant women</li> <li>Delivering babies and assisting with deliveries</li> <li>Giving medication and immunizations to children</li> <li>Advising on child nutrition (e.g., exclusive breastfeeding for 6 mo, not giving water to children, complementary feeding)</li> </ul>

Giving birth and caring for children are key responsibilities of mothers (i.e., WRA) within the family and society, after caring for husbands and mothers-in-law (Table 1). We found that when young women marry, they usually move to their in-law’s household. There, the new wife learns from the mother-in-law and other senior female kin about her role in the family, including MCN practices.

We found that grandmothers have numerous roles in the family, including advising, coaching, and coordinating activities of other family members and managing family resources (Table 1). Table 2 provides expanded details on the pivotal support that grandmothers provided for a newborn’s nutrition and development. Further, all of the mother’s responsibilities are carried out under the grandmother’s supervision and refusal to comply with her advice is a sign of

disrespect for the grandmother, husband, and for the community in general.

Men were identified as “head of the household,” providing food for the family and ensuring their well-being, but were rarely involved in domestic tasks such as caring for children (Table 1). All families had grandfathers or older men who were the “wise family advisors.” They were very rarely involved in advising on MCN practices, delegating this role to the grandmothers.

Our research found that mothers knew health workers’ advice on optimal MCN practices. However, they described multiple instances where the health workers’ advice differed from that of the grandmothers, and mothers usually followed the advice of grandmothers, given their authoritative supervisory role. All groups were clear that “every-

**TABLE 2** Supportive roles and activities of grandmothers related to newborn nutrition, health, and development

Grandmothers' supportive roles for newborns	Activities of grandmothers associated with roles
Caring for the new mother	Disposing of the placenta and planting a tree, according to tradition Sleeping with the newborn and lactating mother for $\leq 3$ mo after delivery to allow new mother to rest and regain her strength Preparing food and providing water to the new mother Giving gifts to the new mother
Teaching and monitoring the new mother's caring practices with the newborn	Washing the mother's nipples with ash prior to breastfeeding Advising on breastfeeding: how to hold the baby; how to make the baby smile while breastfeeding Teaching mother how to pray to give thanks to God for producing breast milk for the baby Advising what to do when the baby cries Advising how to wrap the baby Advising not to leave the baby alone at any time
Direct care for newborns	Teaching how to carry the newborn and protect his or her head Washing the baby after birth and with first time mothers and for the first 40 d Teaching the new mother how to bathe the baby Washing the infant's clothes for the first days or weeks after birth Dressing the baby Keeping baby and mother indoors for the first 3–7 d, until the naming ceremony Giving herbs ( <i>jassuie</i> ) and/or warm water to clean out the stomach Giving herbs ( <i>bunduqui</i> ) with warm water to increase baby's blood Preparing and rubbing traditional oil on the baby to protect from the cold Giving herbs (often garlic, <i>hewee</i> ) to protect the skin Giving herbs ( <i>yumbuyambe</i> ) to make the baby have strong blood, grow fast, and walk early Giving warm water to make the baby stop crying and sleep Monitoring the baby to detect illnesses and to treat with traditional remedies at home Taking the baby to the health center if the mother is too weak to do so Caring for the umbilical cord and burying it when it falls off, according to tradition

one looks to grandmothers for advice and guidance” regarding MCN. While valuing the training of the health workers, the grandmothers’ extensive experience was more highly valued, as illustrated by the frequent response that “the grandmothers have more experience and sometimes advise the midwife.”

### Involvement of grandmothers in MCN programs

During the FGDs, we investigated involvement of grandmothers in past MCN programs. All groups reported that no previous MCN programs explicitly targeted grandmothers, except for grandmothers who are traditional birth attendants. [Table 3](#) gives a list of reasons for the exclusion, with illustrative quotes, including the perception that they are unable and/or unwilling to learn new ideas and to change. In contrast, all groups strongly recommended explicit involvement of grandmothers in future MCN programs, given their cultural roles, time availability, experience, and patience ([Table 3](#)). Grandmothers themselves clearly wanted to be involved, indicating that they were willing to learn in order to combine new ideas with their current practices to improve their advice and to better serve their families ([Table 3](#)).

### Nutrition beliefs and practices

Through our formative research, we identified both beneficial MCN practices (to reinforce) and others that needed to be modified to align with current international recommendations (to dialogue for change) detailed with illustrative quotes in [Table 4](#). The latter were prioritized in the nutrition education component of the project design (see below).

For example, study results found that all grandmothers encourage pregnant women to eat a wide variety of locally available, nutritious, and affordable foods. This practice was reinforced. In contrast, we found that women are advised to eat similar or less quantities of food during pregnancy, especially the last trimester. Thus, the diet during pregnancy was a priority topic—reinforcing the wide variety of foods and dialoguing for change on the quantity and frequency of food, as noted under “new practices” in [Table 4](#).

EBF for 6 mo was another topic that was prioritized. Both grandmothers and mothers were familiar with the Ministry of Health (MOH) advice to breastfeed exclusively for 6 mo, and initially reported doing so, but as the FGDs proceeded, almost all group members reported cultural norms and practices limiting EBF. These included giving water from birth onward, introducing *ngwoh bayei* (rice water and salt) at 2 mo, and introducing thin porridge between 3 and 5 mo. All 3 traditions are widely practiced, while at the same time all recognized the value of breast milk for infants. Therefore, we prioritized EBF as another topic, reinforcing the value of breast milk and dialoguing for change on introducing additional liquids and foods before 6 mo ([Table 4](#)).

### Using research findings in the grandmother-inclusive program design

Based on the research findings, we designed the Mamanieva Project to explicitly and actively involve grandmothers, in addition to mothers. We used the GMIA developed by the Grandmother Project that puts

**TABLE 3** Illustrative quotes from mothers, fathers, and grandmothers regarding inclusion of grandmothers in MCN programs<sup>1</sup>

Reasons for grandmothers' involvement in MCN programs	Illustrative quotes from focus group discussions
Reasons for exclusion: <ul style="list-style-type: none"> <li>• old age</li> <li>• perceived inability to learn and/or change</li> <li>• undervalued contributions to the family and community</li> </ul>	<p>"They are not involved because NGOs think they are too old to understand modern practices, so we leave them at home to look after our children while we go to workshops and we never share the things we learned with grandmothers because we think it is not meant for them." —Mother, Tangahun Community</p> <p>Grandmothers are perceived as "not able to walk long distances," "have weak brains," and "programs were blind to the role of grandmothers in development." —Father, Tanaham Community</p> <p>"Programs think that grandmothers are of no value because they are no longer of reproductive age." —Mother, Mandu Community</p> <p>"We were never involved in the past...They do not respect us and think we belong to the past...They think we don't know anything." —Grandmother, Toma Town</p> <p>"They always shout at us and ask us to leave." —Grandmother, Sogballeh Community</p>
Reasons for inclusion: <ul style="list-style-type: none"> <li>• vast experience</li> <li>• central role as advisors to mothers on MCN issues</li> <li>• daily care for mothers and children</li> <li>• to increase effectiveness</li> </ul>	<p>"All of the issues related to children and women, grandmothers are key actors so they should always be involved. If they are not recognized and involved, they can decrease their efforts caring for children. If they can be strengthened it would be a good thing, they can be more effective in their role." —Mother, Sogballeh Community</p> <p>"The grandmother is the main advisor to the mother." —Mother, Torma Bum Community</p> <p>"Most of us leave our children with the grandmother who even takes care of them more than we do." —Mother, Solon Community</p> <p>"They know more about the affairs of children." —Father, Tangahun Community</p> <p>"We should be involved. As you can see today, you called us and we participated fully and you have seen that we have knowledge. If you involve us, you will see that we are also useful in the community." —Grandmother, Victoria Community</p>

<sup>1</sup>MCN, maternal and child nutrition; NGO, nongovernmental organization.

grandmothers at the center of program design (18). The 5 steps in the GMIA methodology include the following: 1) assess roles, knowledge, and practices; 2) affirm grandmothers' roles and experience; 3) dialogue to build consensus for change; 4) build capacity of grandmother leaders (GMLs); and 5) evaluate results. These steps are fully detailed elsewhere (18) and are described briefly below. None of the 5 steps were previously widely used in the project area, particularly not those tailored to grandmothers (steps 2–4).

In step 2, grandmothers' roles and experience were recognized through use of songs of praise of grandmothers and stories describing their important roles identified in the formative research. These were included in all regular project activities, with additional special communitywide Days of Praise of Grandmothers facilitated by WV staff. We found that the public affirmation of grandmothers contributed to building their confidence and participation, and motivated them as leaders, as reflected in a project video (19). They were not remunerated in any form for their participation.

We used dialogue and consensus-building approaches (step 3) with family actors through several adult education activities, in which participants identified the need for change on MCN topics and agreed on ways to bring about that change. Coordinated by an adult education expert, the project team and District MOH Nutritionist developed and pretested activities including songs, games, picture discussion cards,

and stories-without-an-ending for use in the regular dialogue sessions and intergenerational meetings (20, 21). These activities were used to challenge community members to consider how traditional and "new" practices can be combined to address the priority MCN topics during the monthly or bimonthly dialogue for change sessions and intergenerational forums.

Based on community-developed criteria, GMLs were identified and their capacity strengthened (step 4) using participatory methods facilitated by WV and MOH staff. In each intervention community, collective agreement between GMLs and all grandmothers on MCN topics was promoted using dialogue sessions facilitated by WV staff. Similarly, WV staff facilitated intergenerational forums with grandmothers and mothers, using the same series of participatory activities to promote change. While these forums were designed for focus on grandmothers and mothers, men of all ages and young girls asked to attend, which they were allowed to do.

## Discussion

Formative research based on the family-systems conceptual framework was foundational to identifying whom to target and the appropriate delivery methods for our community nutrition program to improve adop-

**TABLE 4** Formative research findings on MCN beliefs and practices with illustrative quotes and their translation into the Grandmother-Inclusive Approach<sup>1</sup>

Current practices and beliefs to reinforce	Current practices and beliefs to dialogue for change
<p>Maternal nutrition during pregnancy and lactation</p> <p>Grandmothers encourage attendance to prenatal visits at health facilities</p> <p>Grandmothers encourage rest and reduction in workload during pregnancy, to protect the fetus (e.g., avoid carrying heavy loads)</p> <p>Grandmothers promote a wide variety of foods during pregnancy and lactation, including animal-source foods such as eggs, meat, and fish</p> <p>Grandmothers and mothers understand and communicate that mother's food intake is transferred to baby through breast milk</p> <p>Grandmothers advise which foods increase milk production (e.g., cassava leaves with sesame, beans, groundnuts, fish, meat)</p>	<p>Some grandmothers advise home deliveries and many mothers prefer grandmothers or older experienced TBAs rather than younger midwives: "The midwives are trained but the grandmothers have more experience." —Mother, Sogballeh Community</p> <p>"...the traditional birth attendant here does more work during delivery than even the young nurse/midwife. I feel more comfortable with the TBA than the nurse, whom I am far older than...." —Mother, Tangahun Community</p> <p>Grandmothers discourage a few foods, especially during pregnancy, for a variety of reasons (e.g., rats, snakes, lizards) for example, [If a pregnant woman eats snake, then] "her baby will crawl like a snake" —Grandmother, Boi Pieh Community</p> <p>Most grandmothers encourage pregnant women to eat less, especially during the last trimester of pregnancy, so that the baby is smaller and the delivery is easier. Most mothers also prefer a "small belly" for ease of walking and delivery.</p> <p>Only a few noted: "I prefer her to give birth to a bigger baby as people will love to carry her baby." —Grandmother, Sogballeh Community</p> <p>Increasing fluids by nursing mothers is not recommended</p>
<p>New practices to promote</p> <ul style="list-style-type: none"> <li>• Deliver at health facility with support of grandmothers, in case of difficult pregnancy</li> <li>• Increased food intake of pregnant woman by 1 additional meal per day, including last trimester, results in a healthy baby</li> <li>• Give extra food and liquids to lactating mothers</li> </ul>	
<p>Breastfeeding practices</p> <p>Grandmothers provide constant support of mothers during delivery and with newborns: "The nurse is like someone passing by in a vehicle and you ask that person to hold your baby so you can get in. When you get in the vehicle you get your baby back. The nurse helps deliver the baby and then the baby goes home with the grandmother who washes, feeds, and cares for the baby." —Grandmother, Boi Pieh Community</p> <p>"Grandmothers sleep less to monitor the baby, to change the nappy and to wake up the mother to tell her to breastfeed." —Grandmother, Boi Pieh Community</p>	<p>Water and herbs are commonly given in first days of newborn's life, sometimes discarding colostrum. Herbs are said to have medicinal purposes (e.g., "to clean out the stomach") or spiritual purposes (e.g., holy water containing verses of the Koran in Muslim communities)</p>
<p>All mothers breastfeed</p>	<p>Warm water is given at birth and afterwards, as it is believed that there is no water in breast milk; water's benefits include to quench the child's thirst, to help the child sleep or stop them from crying, and to replace breast milk when it is "contaminated" (e.g., mother is sick)</p> <p>"Exclusive breastfeeding is what we were told to do, but we have never tried it. All the children are not satisfied with breast milk alone, so we give water. How can a mother that has not eaten since morning breastfeed?" —Mother, Victoria Community</p>
<p>Some mothers feed colostrum</p>	<p>Most stated: "Babies, like all human beings, need to drink water."</p> <p>All introduce traditional rice water (<i>ngoh bayei</i>), referred to as the "food of the gods" at 2 to 3 mo of age to prepare the child for rice (a staple cultural food in Sierra Leone) and to prevent dehydration</p> <p>"We are afraid to say that we give <i>ngoh bayei</i> because we were told not to give it...[but] <i>ngoh bayei</i> must be given to children otherwise they can cry a lot and even at the hospital they won't know what the problem is or what to do about it. When it is given the baby sleeps and that gives the mother time to rest." —Grandmother, Boi Pieh Community</p>
<p>New practices to promote</p> <ul style="list-style-type: none"> <li>• Emphasize the value of giving only colostrum after birth—including protection from infection and disease</li> <li>• Breast milk contains all the nutrients and water the infant needs for the first 6 mo of life; additional water is not needed</li> <li>• All mothers can produce enough milk if they nurse frequently; more nursing, more breast milk</li> <li>• Breast milk best meets the infant's needs for 6 mo</li> </ul>	
<p>Complementary feeding, responsive feeding, and feeding the sick child</p> <p>Grandmothers teach first-time mothers how to prepare first foods for children: "Grandmothers have vast experience preparing first paps because she has been doing it for a long time. Even the nurse will send us to the grandmother to know how to make the first pap" —Mother, Boi Pieh Community</p> <p>Some porridge recipes include protein-source foods and vegetables</p>	<p>Most grandmothers and mothers introduce first complementary foods at 3 to 5 months of age, and some earlier, as reflected in this quote: "When the child cries too much, the first pap can be given at 2 months, with warm water and herbs before the pap." —Grandmother, Toma Town</p> <p>Grandmothers teach and promote thin porridges for "easy digestibility," which are most often made of water, rice flour, palm oil and salt: "[The] grandmother prepares the first pap. It should be thin, easy to swallow when light, and doesn't make the child constipated." —Mother, Boi Pieh Community</p>

(Continued)

**TABLE 4** (Continued)

Current practices and beliefs to reinforce	Current practices and beliefs to dialogue for change
Grandmothers actively encourage children to eat using the following approaches: patiently taking more time with the child; not showing their frustration; delaying the normal feeding time until the child asks for food; identifying foods that the child prefers; never forcing the child to eat; and promising small rewards for eating (e.g., going for a walk or carrying him or her on her back)	Mothers are less patient than grandmothers when a child is unwilling to eat and use approaches such as threats; forcing food into the child's mouth by holding the nose; beating the child; or leaving the child alone
Mothers and grandmothers actively encourage children to eat more after an illness	Mothers and grandmothers feed children usual or less food during illness
Grandmothers feed children during illness and when the mother or elder daughters are absent	
New practices to promote	
<ul style="list-style-type: none"> <li>• Wait until 6 mo to introduce foods</li> <li>• From 6 mo, infants can digest thick porridge; it should be soft but not watery</li> <li>• Include a wide variety of foods in the porridge (animal-source foods, protein, fruits, and vegetables)</li> <li>• Use grandmothers' active feeding practices of encouragement</li> <li>• Feed small, frequent meals throughout the day because of infants' small stomachs</li> <li>• Sick children need extra food and fluids to fight and heal from illness</li> </ul>	

<sup>1</sup>MCN, maternal and child nutrition; TBA, traditional birth attendant.

tion of optimal MCN practices in rural Sierra Leone. Findings showed the pivotal role of grandmothers in MCN, which led to the adoption of the GMIA for the Mamanieva Project design. Inclusion of grandmothers was essential to a culturally grounded design. The program was evaluated in 2016 and showed positive effects on key MCN practices (14, 15), which will be reported in subsequent articles. In past MCN programs in the project area, grandmothers were excluded and their role and influence within family systems was underestimated, based on assumptions that they are unable to learn and unwilling to change. Grandmothers who participated in this research expressed their interest in being involved in future MCN programs to learn new ideas and thereby better fulfill their important roles in family life (Table 3), similar to findings in previous studies (3–6, 9).

While the importance of a family-systems approach to designing effective MCN policies and programs has been acknowledged for some time (2) and recommended by the WHO (8), use of this more ecological approach remains limited (7). Similar to our findings, others who have adopted a family-systems approach identified the pivotal role of grandmothers in MCN and explicitly involved them in their program designs (3–5, 9), with some promising results in improved nutrition practices in Senegal (3) and Kenya (5). Past programs have frequently conducted qualitative formative research to investigate mothers' and health workers' nutrition knowledge, attitudes, and practices (22–29). However, very few studies have systematically investigated the roles of other family actors, and consequently few programs have identified the need to explicitly involve other family members, namely grandmothers (7).

The family-systems formative research methodology detailed in the 2015 publication, *A Focus on Families and Culture* (13), is available for practitioners developing MCN programs based on an ecological and culturally grounded framework. Our experience demonstrates that the methodology can be used in a low-resource setting by an NGO with government collaboration, provided that adequate training is conducted. In training on these research methods we found the expertise of the Grandmother Project to be indispensable. Our positive findings have led WV and partners to replicate this family-systems approach in other program areas in Sierra Leone, Mauritania, and Cambodia.

### Strengths and limitations

An increased investment was required to conduct the formative research. In part, this was a strategic investment to provide a comprehensive understanding of family systems that were the foundation for developing a culturally appropriate program. However, the additional expertise of the research team members may have influenced data collection and interpretation. We addressed this, in part, by ensuring that all research team members, with the exception of the lead, were fluent in Mende. Further, we used participatory activities that were more likely to elicit actual beliefs and practices of the participants. The consistency of findings between groups suggests that the findings were authentic.

The large sample of community members in our qualitative research generated rich data and contributed to increased recognition of grandmothers' role and experience in MCN by grandmothers, other community members, and MOH and WV staff. The large amount of data generated was handled through use of a simplified and participatory approach to data management and analysis. This simplified approach does risk loss of meaning by not recording and transcribing the FGDs in the original language but is more feasible for programs with limited resources.

### Conclusions

Our formative research results, grounded in a family-systems approach, revealed that mothers in southern rural Sierra Leone are embedded in family systems of caring, coaching, and supervision that are part of a wider cultural context where grandmothers have central influence on pregnant women and women with young children in matters related to MCN. These findings clearly point to the need for a radical change in MCN program design, to give grandmothers a central role and to go beyond messaging to leveraging their existing cultural roles and strengthening their MCN knowledge and skills. The GMIA approach can complement existing health services and community nutrition programs targeting WRA and may contribute to decreasing the gap between the knowledge of younger women and their culturally designated senior advisors. The results of our research point to the need for increased use of a family-systems framework in designing community nutrition programs and call for more implementation re-

search on the effectiveness of grandmothers as change agents in MCN programs.

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