



Strengthening Maternal, Infant, and Young Child Nutrition Training and Counseling in Ghana: A Community-Based Approach

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ABSTRACT

Background: Evidence-based maternal, infant, and young child nutrition (MIYCN) counseling provides caregivers essential nutrition education to optimize infant and young child feeding practices and subsequently improve child growth and development. Effective integration of responsive feeding (RF) into current MIYCN training requires working with priority communities.

Objectives: Study objectives were to 1) assess MIYCN knowledge and practices among Ghanaian caregivers, 2) identify factors influencing RF/responsive parenting (RP) among Ghanaian caregivers, 3) identify barriers and facilitators influencing MIYCN training and counseling among Ghanaian health care providers, and 4) document recommendations for integrating an RF curriculum into the existing MIYCN training.

Methods: This was a qualitative study, conducted within the Central Region of Ghana, based on 1) 6 focus groups with caregivers of young children (<36 mo; $n = 44$) and 2) in-depth interviews with health care providers ($n = 14$). Focus group transcripts were coded independently, consensus was reached, and a final codebook developed. The same coding process and thematic analysis were applied to the in-depth interviews.

Results: Caregivers identified 3 domains influencing the primary outcome of RF/RP knowledge and practices and the secondary outcome of MIYCN: 1) health care provider counseling; 2) support from family, friends, and community members; and 3) food safety knowledge and practice. Providers identified barriers to MIYCN provider training as well as caregiver counseling which included limited access to financial and counseling resources and limited qualified staff to deliver infant and young child feeding counseling. Identified facilitators included availability of funding and counseling staff with adequate resources. Health care providers strongly endorsed integrating an RF curriculum into MIYCN training and counseling along with providing RF training and distribution of RF materials/tools to facilities.

Conclusions: Health care providers directly influenced RF/RP practices through MIYCN counseling. Strengthening MIYCN counseling through the integration of an RF curriculum into MIYCN training is desired by the community. *Curr Dev Nutr* 2022;6:nzac127.

Keywords: maternal infant and young child nutrition, health care provider training, qualitative research, responsive feeding, counseling, Ghana

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Abbreviations used: C-IYCF CP, UNICEF's Community Infant and Young Child Feeding Counseling Package; FG, focus group; IYCF, infant and young child feeding; LMIC, low- and middle-income country; MIYCN, maternal, infant, and young child nutrition; RF, responsive feeding; RP, responsive parenting; RF/P-KP, responsive feeding/parenting knowledge and practices.

Introduction

Evidence-based maternal, infant, and young child nutrition (MIYCN) counseling is a crucial intervention for promoting maternal prenatal and postpartum health and optimizing infant and young child growth and development (1–3). The effectiveness of MIYCN counseling hinges on high-quality training and solid counseling skills, which can make a difference in the lives of infants in low- and middle-income countries (LMICs). Indeed, training health care providers in nutrition in LMICs translates into improved outcomes in feeding frequency, energy intake,

and dietary variety for children ages 6 mo to 2 y (4). Yet, the lack of governmental priority setting, limited sustained funding for trainings, health staff over-utilization, and short length of employment pose barriers to effective nutrition training for health care providers (5, 6). Subsequently, lack of understanding of materials and lack of counseling skills on the part of health care providers inhibit effective knowledge transfer and pose barriers to MIYCN counseling to caregivers of infants and young children (4, 6).

Ghana represents an ideal setting to find out how to improve MIYCN counseling because of their strong commitment to improving infant

feeding outcomes. Since the mid-1970s, Ghana has worked to create national-level policies to strengthen infant feeding practices, including focusing on weaning foods, iodine and other micronutrient deficiencies, recovery of malnourished children, exclusive breastfeeding, and complementary feeding practices (7). Additionally, the World Health Assembly and UNICEF implemented the Global Strategy for Infant and Young Child Feeding in 2002, which further strengthened MIYCN training and education within several countries, including Ghana (8). Since then, Ghana has developed national strategies and implemented MIYCN initiatives, such as Becoming Breastfeeding Friendly, to strengthen the national environment to support optimal health and nutrition practices for improved infant health outcomes (9, 10).

Despite these efforts, Ghana's infant feeding indicators are still not meeting UNICEF's recommendations; only 56% of newborns are placed to the breast within 1 h of birth, 52% of children younger than 6 mo are exclusively breastfed, and only 28% of children meet the minimum diversity of diet recommendations (9). Closely examining intermediate factors, such as the content and quality of MIYCN training and counseling and taking into account the community perspective, is a promising approach supported by the Government of Ghana. Furthermore, studies that document ways to improve program delivery of MIYCN training and counseling from both the health care provider and caregiver perspectives, taking the local context into account, are strongly needed.

Indeed, several educational tools are available for LMICs to provide evidence-based MIYCN training and counseling. A course provided by the WHO teaches providers how to counsel caregivers on optimal infant and young child feeding (IYCF) practices (11). The USAID Infant and Young Child Nutrition Project has adapted many materials to be country-specific for multiple LMICs and has produced several implementation guides for how to address MICYN needs at the community level (12). One widely used tool, the UNICEF Community Infant and Young Child Feeding Counseling Package (C-IYCF CP), is utilized in over 90 countries (13). The C-IYCF CP can be adapted to be culturally specific and includes a database of images for new materials to be created (13, 14). Other notable resources include Alive and Thrive, Global Health Media, and Global Breastfeeding Collective, which each provide videos, guides, and training materials for LMICs (15–17).

Responsive feeding (RF), defined in an interdisciplinary way as “feeding practices that encourage the child to eat autonomously and in response to physiological and developmental needs, which may encourage self-regulation in eating and support cognitive, emotional and social development,” is key to include in MIYCN curriculums that mainly focus on what to feed infants and young children (18). RF involves verbal or nonverbal communication between the child and the caregiver during a feeding session, and RF is observed when these 3 steps occur: “1) the child makes a facial expression, vocalization, or another action alerting the caregiver to the child's hunger or satiety level; 2) the caregiver understands the alert and responds in an emotionally supportive and developmentally appropriate manner; and 3) the child responds to the caregiver's actions in a predictable manner” (19). In the absence of RF, non-RF practices such as emotional feeding [i.e., “using food to comfort, distract, calm or shape an infant/child's behavior” (20)] or controlling feeding [i.e., “using pressure, restriction, or reward to calm or shape an infant/child's behavior” (20)] can negatively influence a child's ability to

recognize hunger and satiety cues and prevent them from being able to self-regulate (19).

RF counseling can help caregivers provide a nurturing and caring environment to promote healthy eating habits (21). RF interventions within low-, middle-, and high-income countries have been associated with improved maternal feeding practices (i.e., RF approaches, breastfeeding), child feeding practices (i.e., child self-feeding), and in some instances, growth indicators (22–27). In addition, recent evidence shows that early-childhood feeding interventions that included RF and were delivered by health care professionals improved RF behaviors, including emotional and controlling feeding as well as feeding restriction, and improved child weight outcomes (28, 29). MIYCN tools need more robust RF content; thus, it is timely to explore this as a potential strengthening tool for MIYCN counseling. Indeed, RF counseling card packages as well as RF toolkits, such as the Carolina Global Breastfeeding Institute Responsive Feeding Toolkit, are important resources to consider integrating into existing MIYCN tools (30, 31). Therefore, the study objectives were to: 1) assess MIYCN knowledge and practices among Ghanaian caregivers, 2) identify factors influencing RF/responsive parenting (RP) among Ghanaian caregivers, 3) identify barriers and facilitators influencing MIYCN training and counseling among Ghanaian health care providers, and 4) document recommendations for integrating RF curriculum into the existing MIYCN training.

Methods

Study design

This study was part of a larger multiphase qualitative study conducted in the Awutu Senya East and the Gomoa East districts within the Central Region in Ghana that assessed the acceptability and cultural appropriateness of developed RF counseling cards for Ghanaian caregivers (30). The Central Region provided an important setting for this study because it has a high poverty rate (34.9% of the population lives within the 2 lowest income quintiles) and has the highest perinatal mortality rate (46 deaths per 1000 live births) of all regions (9). The Central Region also has higher levels of chronic and acute malnutrition (22% and 14%, respectively) (9). Only 61% of mothers initiated breastfeeding within 1 h following birth and only 27% of children received the minimum acceptable diet (i.e., 4+ food groups and receiving solid or semi-solid food at least twice a day for infants aged 6–8 mo and at least 3 times/d for children aged 9–23 mo) (9), indicating the need for intensive counseling for parents on appropriate IYCF practices.

This study was conducted from May to August 2018 and included the following: 1) 6 focus groups (FGs) that assessed parental knowledge, attitudes, and behaviors of IYCF as well as RF/RP of infants and young children (32) and 2) 14 in-depth interviews with health care providers to document the barriers and facilitators to MIYCN training and counseling (33). Ethical clearance for the research was obtained from the Yale University Institutional Review Board and from the Ghana Health Service Ethical Review Board. As is customary, permission was also sought and granted from the Central Regional Secretariat for regional, district, and local health care providers to be interviewed for this project. Initially, a meeting was held with the Central Regional Secretariat where the project was presented by one of the co-investigators (AS) and ethical approval letters from both aforementioned institutions were provided.

Once a permission letter was secured from the Central Regional Secretariat, meetings were held with health officials at regional, district, and subdistrict health facilities within Awutu Senya East and Gomoa East to present the project, answer questions, and share the institutional review board (IRB) approval and permission letters that demonstrated high-level regional support for conducting the project. Final permission to conduct the interviews was received from these health officials.

Approach

Focus groups.

Six FGs (32) (3 with mothers, 3 with fathers) were held within 3 communities (1 urban, 1 semi-rural, and 1 rural) in the Central Region in Ghana. Mothers ($n = 26$) and fathers ($n = 19$) were recruited separately and were eligible if they 1) were 18 y of age or older, 2) had a child under 36 mo of age, 3) were a primary caregiver of the child, 4) were involved in preparing food/feeding the child, and 5) resided or worked in the communities where the FGs were conducted.

Within all communities, mothers and fathers were recruited primarily from the Child Welfare Clinics. A community health volunteer also helped identify participants within the rural and semi-rural villages, while in the peri-urban community door-to-door recruitment was also utilized. Prior to the start of the FGs, each participant was confidentially read the consent form by the moderator. Once it was signed, a brief demographic survey (i.e., age, educational background, occupation, family size) was then administered. Two pretested FG guides (1 for mothers, 1 for fathers) were then used to assess attitudes and practices around infant feeding, infant sleep and play, and RF. The mother's guide included extra questions around barriers/facilitators for breastfeeding practices. All FGs were conducted in the local Ghanaian language, Twi, by trained moderators and lasted approximately 2 h. To maintain confidentiality, prior to the start of the FG, participants were allocated individual numbers and were addressed by those numbers during the FG discussion. The FGs were audio-recorded, then translated and transcribed into English by the moderator, a native Twi speaker and nutrition officer. Participants were compensated with soap (~\$3 US dollars) for their participation. Audio recordings were translated and transcribed by trained staff and reviewed by one of the authors (AS) for accuracy.

In-depth interviews.

Key informants from the Awutu Senya East District and the Gomoa East District of Ghana generated a list of all MIYCN health care providers in both districts. Participants were eligible if they were health care providers that 1) were MIYCN trainers and/or counselors, and 2) were stationed within the Central Region Health Directorate or health facilities within the Gomoa East District or Awutu Senya East District. A convenience sample of health care providers ($n = 14$) was selected for the interview, including nutrition officers, health promotion officers, community health nurses, staff nurses, midwives, and community health workers. This was intentional to try to have 1 health care provider within each role who trained or delivered MIYCN counseling interviewed in each district.

Eligible participants were initially contacted by the key informant from their district. Once the participant agreed to participate, they were contacted by study staff to schedule the interview. Informed consent was obtained in writing from all participants before proceeding with

the interviews. Participants were assured during consent that participation was voluntary and deciding to not participate would not affect their employment or services they were entitled to. To maintain confidentiality, prior to the start of the interview, participants were allocated individual numbers and were addressed by those numbers during the interview.

Two semi-structured interview guides were developed and pretested, one for providers who delivered MIYCN education to caregivers (educators) and one for providers who delivered MIYCN training to staff (trainers). If a participant's role overlapped, they were asked questions from both guides. The interview guides asked for participant demographics (i.e., age, educational background, occupation, family size) as well as MIYCN pre-service training, in-service training provided (for trainers) and received, and MIYCN counseling delivered (i.e., for educators). Participants were also shown images and messages corresponding to the RF counseling cards (30) and asked to describe what they felt was needed to incorporate RF messages into the existing MIYCN training and counseling system. All interviews were conducted in person, in English, were audio-recorded, and lasted approximately 2 h. Audio recordings were transcribed by trained study staff or by a transcription service (GoTranscript) and were reviewed by a coauthor (MT) for accuracy. Participants were compensated with phone credit (~\$5 US dollars) for their time.

Data analysis

Demographic characteristics for the FGs and in-depth interviews were analyzed using the chi-square test for categorical variables and the independent t test for continuous variables.

Thematic content analysis was used to analyze the qualitative data obtained from the FGs and in-depth interviews (34). For both the FGs and in-depth interviews, an iterative, inductive approach led to the development of codes to identify domains (i.e., groups of themes), themes (i.e., "an implicit topic that organizes a group of repeating ideas") (35), and subthemes (i.e., subdivisions of themes to provide more detailed view of the data) (35).

More specifically, for the FGs, 3 of the authors (AS, RP-E, and AJH-F) independently read and coded the first FG transcript. They met to discuss and reach consensus (i.e., all agreed) on the emerging domains, themes, and subthemes as well as the initial coding scheme, and an initial codebook was developed reflecting the agreed-upon codes. This same process was conducted until saturation, defined as "the point where additional data do not lead to any new emergent themes" (36, 37), was reached once 83% of the FGs were coded. Once saturation was reached, the codebook was considered finalized and it was applied to the remaining transcript to confirm all domains, themes, and subthemes. The same authors then discussed and reached consensus on the quotes that best illustrated each theme as well as the conceptual model, which is a visual representation of the associations between domains and how they influence the outcome (i.e., RF/RP knowledge and practices) (38). The iterative development of the final conceptual model consisted of the initial development of the conceptual model by 1 author (AS), then subsequent discussions across 3 virtual meetings (AS, RP-E, AJH-F) where the model was continually revised until the 3 co-authors reached consensus on the final model (38).

The in-depth interviews were analyzed in a similar manner. Three of the authors (MT, RP-E, AJH-F) independently coded half of the

TABLE 1 Focus group characteristics by gender¹

Characteristics	All (N = 44)	Fathers (n = 18)	Mothers (n = 26)	P ²
Age, mean ± SD, y	33.9 ± 9.8	39.3 ± 8.3	30.1 ± 9.1	0.010
Number of children, mean ± SD	3.2 ± 1.8	3.6 ± 1	2.9 ± 1.7	0.232
Marital status, ³ n (%)				0.262
Single	4 (9.0)	0 (0.0)	4 (16.0)	
Married	34 (79.0)	16 (88.9)	18 (72.0)	
Partner (not living together)	5 (11.6)	2 (11.1)	3 (12.0)	
Highest educational level, n (%)				0.142
No education	3 (6.9)	0 (0.0)	3 (11.5)	
Primary	7 (15.9)	2 (11.1)	5 (19.2)	
Junior high school	21 (2.3)	9 (50.0)	12 (46.2)	
Secondary education	10 (22.7)	4 (22.2)	6 (23.1)	
Bachelor's degree or higher	3 (6.8)	3 (16.7)	0 (0.0)	
Employment status, n (%)				0.539
Not employed	8 (18.2)	2 (11.1)	6 (23.1)	
Currently employed	36 (81.8)	16 (88.9)	20 (76.9)	

¹Percentages may not sum to 100% due to rounding.

²Chi-square tests were conducted between groups across categorical demographic data, and independent t tests were conducted to determine the differences between groups across continuous variables. Significance was set at the $P < 0.05$ level.

³Marital status of mothers did not sum to 100 due to 1 missing data.

transcripts ($n = 7$) and meetings were held after each transcript to reach consensus on the emerging domains, themes, and subthemes for a comprehensive codebook. Saturation was reached with the 7 interviews, resulting in the final codebook. Transcripts were then coded using the software, Dedoose (SocioCultural Research Consultants), by MT using the finalized codebook (39). A conceptual model was developed through integration of findings as the result of a consensus process among the investigators.

The authors who analyzed the data independently were required to reach agreement on the domains, themes, and subthemes during the analysis process and across several meetings. This iterative consensus process was intended to minimize bias in the analysis and interpretation process.

Results

Focus groups

Participant characteristics.

Mothers were significantly younger than fathers (30 vs. 39 y old) (Table 1). No significant differences between groups were found for other demographic characteristics.

Domains.

Three domains emerged as directly and indirectly influencing the secondary outcomes of parental MIYCN knowledge and practices (composed of maternal IYCF knowledge and practices) and the primary outcome of RF/parenting knowledge and practices (RF/P-KP) (Figure 1). These domains were as follows: 1) health provider counseling; 2) support from family, friends, and community members; and 3) food safety knowledge and practice.

Health provider counseling.

Health care providers gave informational support to the caregivers based on the trainings that they received. MIYCN counseling occurred during antenatal and postnatal care visits as well as growth monitoring and vaccination visits. At the antenatal care visitations, mothers were educated by midwives and nurses on topics including prenatal nutrition, healthy foods, how to feed the child, and exclusive breastfeeding for 6 mo. Similarly, at the postnatal care visits, mothers received counseling and education on postpartum nutrition, breastfeeding initiation, exclusive breastfeeding, and other recommended IYCF practices. During growth monitoring and vaccination visits, providers counseled on diverse feeding topics related to exclusive breastfeeding for 6 mo, initiation of complementary feeding at 6 mo, properties of breast milk, etc. The MIYCN counseling delivered by health care providers directly provided parents with the knowledge and the capability to make informed decisions on parental MIYCN practices and subsequently RF/P-KP. This is evidenced by this father's words:

“... if she [the mother] takes the child...they are able to teach that maybe this food, that at this stage of the child, you're supposed to give, and so we're able to learn...” (FG3)

Support.

Support from family, friends, and other individuals in the community (i.e., pastors) directly facilitated parental MIYCN knowledge and practice, which facilitated RF/P-KP. Family and friends gave parents informational support (e.g., education/counseling on childcaring practices), instrumental support (e.g., doing chores, giving parents the time needed to respond to their children's needs), and emotional support (e.g., encouraging IYCF counseling participation), which, in turn, influenced their MIYCN knowledge, MIYCN practices, and then RF/K-RP.

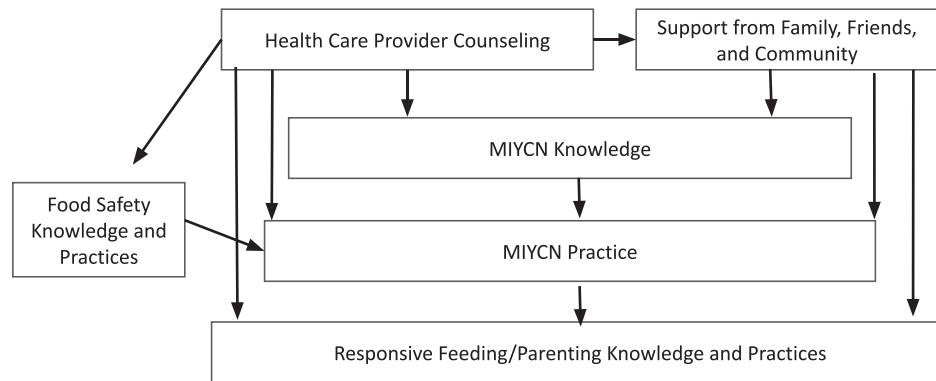


FIGURE 1 Conceptual framework of factors influencing MIYCN and RF/P-KP. MIYCN, maternal, infant, and young child nutrition; RF/P-KP, responsive feeding/parenting knowledge and practices.

Fathers emerged as primary supportive figures for mothers by providing advice on feeding the child, providing food and financial assistance, caring for the child and mother, and attending the Child Welfare Clinics with the child. Fathers who received counseling from health care providers felt empowered to help mothers as illustrated here:

“The advice that was given [by the health care provider] was mostly on feeding of the mother. They advised that the mother should take fruits and vegetables and so when we returned, I also kept track and continuously advise her and encourage her to take those food items.” (FG5)

However, participants also reported that some fathers were absent from the house or did not have much time for the mother and child, thus making the mother the primary and sometimes only caregiver.

Food safety knowledge and practice.

Common food safety practices included hand washing, washing bowls and cooking utensils, serving food at a hot temperature, covering food, never leaving food unattended, and not serving contaminated food. Food safety knowledge directly influenced the way parents practiced MIYCN and indirectly influenced RF/P-KP, as suggested by this mother:

“...you clean your utensils so that when you’re preparing the food everything has a lid covering it so that house flies don’t come settling in on it to lay their eggs, because when it’s like that and we eat then we’ll fall sick.” (FG6)

Food allergy beliefs and practices were found to be a subtheme of food safety. Parents believed some foods stimulated physical reactions in their children, such as beans and fruits. Parents reported changing feeding practices based on physical reactions, such as diarrhea, seen in their children. This mother described it this way:

“I know the food does not agree with the child’s system or body.... when your system doesn’t like [certain foods] and you eat, you see that there will be rashes on your skin. It will be like red and black spots on your skin. And there are some too they [children] run diarrhea. Then it will make you realize that the thing that your child ate, it doesn’t agree with their stomach. So I need to change my life in relation to that.” (FG6)

However, it could not be assessed how extensive food allergies were and if the interpretation of allergies by caregivers was based on cultural and personal beliefs rather than a clinical diagnosis.

An understanding of the secondary outcome of MIYCN (composed of maternal IYCF knowledge and practices) emerged from the findings. Regarding MIYCN knowledge, parents were knowledgeable about a variety of topics, including exclusive and continued breastfeeding, breast-milk composition, hygiene of the breast, maternal diet during milk production, and complementary feeding practices (i.e., dietary diversity, texture, types of complementary foods and nutritious complementary foods for the child). Several sources of MIYCN knowledge were cited including the health care provider, family, school, television, and church. Cultural beliefs were integrated into MIYCN knowledge as illustrated by this mother:

“...if the eye of the baby isn’t clear, you can express some milk and put it on the baby’s eye.” (FG1)

Regarding MIYCN practices, mothers who practiced good nutrition during pregnancy/breastfeeding and good hygiene were aware of the importance of prenatal and postpartum maternal care. Mothers followed good positioning and attachment practices during breastfeeding. Some mothers followed complementary feeding counseling guidance (e.g., providing diet diversity, ensuring food texture is age appropriate), while certain beliefs prevented others from adhering to it (e.g., beliefs that foreign foods/canned foods were more nutritious than locally available foods or that introducing water early makes a child strong).

RF/P-KP emerged as the primary outcome because it was influenced directly and indirectly by all other domains. Parents were well versed in identifying hunger and satiety cues as well as how to introduce new foods in a responsive manner (e.g., encouraging the child to eat, not forcing the child to eat). For parents, family meals were a place to model good eating behavior, have the family sit together, and supervise the child eating. For some mothers, having family meals was challenging if the father worked late and was not home to eat together. Parents used appropriate calming techniques to soothe their child, even at night, including picking him/her up, singing, rocking, and changing the diaper. Maintaining routines and playing were important RF practices for parents. Occasionally, non-RF/RF practices were described, including forc-

TABLE 2 MIYCN counselor and trainer characteristics

	Counselors (n = 8)	Trainers (n = 6)	P ^{1,2}
Age, y	28 ± 3.5	37 ± 4.7	0.001
Number of years of tertiary education	2.3 ± 1.0	4 ± 0.6	0.002
Length of post, y	3.5 ± 2.7	4 ± 2.3	0.359
Level of position	Subdistrict and community	Regional and district	

¹Values are means ± SDs.

²Independent t tests were conducted to determine the differences between groups across continuous variables. Significance was set at the $P < 0.05$ level.

ing a child to eat, bribing a child with something to calm, or ignoring, getting angry, or hitting a crying child as this father describes:

“So there are some mothers, they can ignore all that the child is doing, and do their own thing and [the child] keeps crying...”
(FG2)

Conceptual model

The conceptual model shows how each factor influenced parental MIYCN knowledge and practice and subsequently RF/P-KP (Figure 1). Health care providers counseled on IYCF, food safety, and in some instances, provided some RF/P-KP counseling/guidance directly to parents and support persons. Parents were then able to identify both the nutritional and the psychosocial needs of their children and attend to these needs through RF/P-KP. Family, friends, and community members provided instrumental, informational, and emotional support that influenced parental MIYCN knowledge and practice, which, at times, was not aligned with counseling recommendations. In turn, MIYCN knowledge and practices influenced RF/P-KP by enhancing RF practice as long as support for MIYCN knowledge and practices provided RF/P-KP guidance aligned with recommendations. In the absence of that guidance, non-RF practices sometimes prevailed. In addition, support enabled parents to directly learn and adopt some responsive as well as non-RF behaviors.

Knowledge of food safety, such as hygienic practices and safe food-preparation skills, influenced MIYCN practice and subsequently RF/P-KP. Last, MIYCN knowledge directly influenced MIYCN practices, including breastfeeding and complementary feeding. Some of the MIYCN practices facilitated RF/P-KP, while others were barriers to the practice of RF/P-KP.

In-depth interviews

Participant characteristics.

All participants were female and employed by Ghana Health Services. Although 7 participants indicated that their duties overlapped with both the trainer and counselor role depending on the needs of their facility or the availability of other staff, they each identified primarily with either a trainer or counselor role related to MIYCN. Table 2 describes characteristics for those who primarily provided MIYCN training to other health providers (nutrition officers, health promotion officers, and midwives) and for those who primarily provided MIYCN counseling to caregivers (community health nurses, staff nurses, community health workers, and midwives). Trainers were significantly older and had more tertiary education compared with the counselors. Trainers tended to work at the

regional and district level, overseeing multiple staff, whereas counselors were at the community level working directly with caregivers of infants and young children.

Domains

Three primary domains emerged from the analysis: MIYCN training, MIYCN counseling delivery, and integration of RF into the curriculum.

MIYCN training.

Pre-service and in-service training were the mechanisms by which providers received MIYCN training. The extent of pre-service MIYCN training was based on the education program that participants attended (e.g., enrolled nurses were trained to provide clinic-based services; therefore, they reported receiving little MIYCN pre-service training). Topics included breastfeeding positioning and attachment, complementary feeding, malnutrition, immunization, and sanitation; however, it was noted that MIYCN was embedded within other larger nutrition courses, often being touched on in smaller portions of lectures, as confirmed by 1 provider:

“...it was part of a semester...the courses that we do. So, it wasn't a specific training that we received.” (Participant 9)

Providers received MIYCN in-service training in a formal or informal manner. Formal trainings were scheduled workshops delivered by nutrition officers and health promotion officers at regional and district levels consistent with the “training of trainers” model (40). Formal trainings followed global curriculums (e.g., the C-IYCF CP), used formal manuals that covered various IYCF topics [e.g., complementary feeding, breastfeeding, positioning and attachment, the Four-Star diet (i.e., a balanced diet to contain fruits, vegetables, legumes, and animal-source proteins)], provided counseling cards and tools, and included field work.

Most participants ($n = 10$) reported they had attended at least one formal in-service MIYCN training during their nursing career; however, the time-intensive nature of the formal trainings (i.e., often lasting from 3–6 long days) along with the expense prevented them from being held frequently. In fact, participants shared that the last C-IYCF CP training in the area was in 2014/2015. Consequently, participants relied on “informal” trainings where formally trained staff transferred their knowledge through brief group settings in their health facility to relay MIYCN information, sharing training materials and providing quick updates on MIYCN topics, answering questions about MIYCN using the new information, or on-the-job MIYCN training. Often, these in-

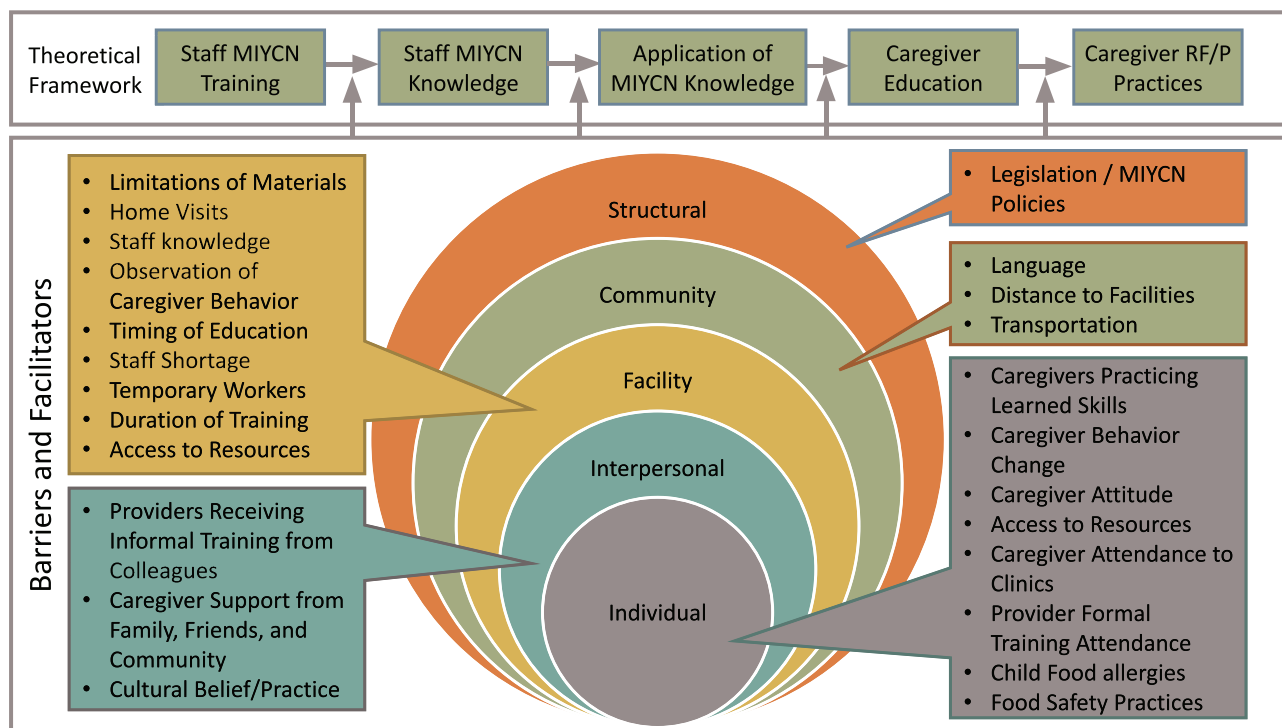


FIGURE 2 Socio-ecological model explaining provider- and caregiver-level barriers/facilitators to delivering MIYCN training to providers and education to caregivers. MIYCN, maternal, infant, and young child nutrition; RF/P, responsive feeding/parenting.

formal trainings lacked the full details colleagues desired as described by one provider:

“...that is also a challenge, you see when people [go to these] meetings they cannot go through everything with you. So, they give you the materials and you will ask probing questions to understand it better because they sort of summarize the whole thing for you.” (Participant 2)

For a few participants ($n = 4$), informal training was their only source of MIYCN training during their employment.

Counseling delivery.

MIYCN education was primarily delivered to mothers of infants and young children during one-on-one counseling sessions and group health talks within the Child Welfare Clinics sessions (i.e., the weekly child weighing and growth monitoring sessions held at health facilities), and at home visits within the community. Home visits were a key facilitator for reaching caregivers who do not regularly attend the Child Welfare Clinic sessions.

Counseling focused on IYCF topics including exclusive breastfeeding, complementary feeding, attachment and positioning, hygiene, malnutrition, and the Four-Star diet. However, access to visual materials to aid counseling varied by facility, including the C-IYCF CP counseling cards, causing counselors to use any available resources, including posters and flipcharts, from other campaigns and sources (i.e., GoodLife Campaign).

A conceptual model emerged showing how MIYCN knowledge was transferred from staff to caregivers (Figure 2). High-level staff MIYCN

training impacted staff MIYCN knowledge. This allowed them to deliver high-quality MIYCN education effectively, subsequently improving caregiver education and ultimately caregiver practices. However, multiple barriers and facilitators influenced this MIYCN training and counseling pathway. Barriers, organized using a socio-ecological model, were either provider level (i.e., related to deficits in their own training and facility resources) or caregiver level (i.e., related to the challenges of being able to follow the education) (41). Provider-level barriers included staff shortages (making it difficult for health care providers to attend to the large crowds at the Child Welfare Clinic sessions), variations in MIYCN training for staff (i.e., formal vs. informal), and limited access to facility-level resources including educational materials and funding.

Providers described several barriers caregivers faced adhering to MIYCN recommendations. Lack of social support from caregivers’ spouse or extended family often came in the form of alternate advice that was interconnected with cultural beliefs and practices of Ghanaian caregivers that did not reflect current MIYCN recommendations. One provider described it this way:

“Usually, the other members of the family try to give them their own ideas. The grandmothers, they’ll give them the primitive ideas, and this is a challenge. You teach them [the mothers], then they [the mothers] go to the house, and it’s like they [other family members] force it on them, that, ‘No, do it this way. No, give water to the child. A child needs water. Before 6 months, the child needs water, so give the child water.’” (Participant 8)

Language barriers impacted provider counseling, as some caregivers spoke other languages. Caregivers also ignore the advice of the coun-

selors, which was attributed to the need for repeated exposure to change behavior or that recently learned skills were not being practiced. Many providers also attributed the low application of MIYCN knowledge to the lack of access to resources that parents faced and the enabling environment as described here:

“...sometimes you give them all the beautiful, nice talks about feeding but the challenge is their enabling environment, they go back to the community, sometimes poverty or they don't have money to be able to buy into whatever idea you've shown them, so that they can be able to make that choice.” (Participant 2)

Integration of RF into the curriculum

Providers strongly supported incorporating the newly designed RF counseling cards (30) with the C-IYCF CP. While providers had various ideas about the training on the RF cards, including number of days of training, funding sources, delivery, and training content, providers desired an integrated training on RF and MIYCN. A few providers realistically voiced concerns about the extra time that the new guide would add to both training and the counseling sessions that were already lengthy and difficult to manage considering the shortage of staff.

Discussion

Qualitative findings from caregivers and providers in the Central Region of Ghana demonstrated that current MIYCN training and counseling needs strengthening to overcome identified barriers. While parents demonstrated some MIYCN and RF knowledge that was consistent with MIYCN counseling messages, the emergence of suboptimal MIYCN practices and non-RF/RP practices (including severe behaviors such as hitting a crying child) demonstrated gaps in MIYCN counseling. Therefore, more high-quality, targeted MIYCN and RF/RP education is needed to improve MIYCN and RF/RP knowledge and practices among parents and other caregivers of infants and young children within this region. This has strong potential to translate into improved outcomes given that research from Ghana shows that caregiver responsiveness during child feeding positively influences growth and nutrition outcomes (42).

Providing more consistent, quality MIYCN training would be one step towards strengthening service delivery. Our findings showed that the pre-service MIYCN curriculum varied among providers and was dependent upon their degree program. Without consistent and high-quality pre-service and in-service formal training available, health care providers may not receive the complete MIYCN knowledge they need to deliver comprehensive and high-quality MIYCN education to caregivers. Other MIYCN initiatives in Ghana have previously highlighted the importance of providing high-quality pre-service training for health care workers as key for promoting optimal infant feeding practices both at the provider and caregiver level (10).

The conceptual model that emerged demonstrates that training and education delivery are intertwined. Given the multitude of barriers across the various levels of the socio-ecological model, it is key that counseling also addresses the needs and wants expressed by the study caregivers. Addressing the built environment and providing economic supports for families to purchase healthy foods were mentioned, sim-

ilarly to other studies in this region of Ghana (43). Encouraging and incentivizing caregiver attendance to education, particularly for men, could help with education delivery and ensuring strong social support for caregivers to follow the advice of the health care staff (44). Participants mentioned that women who bring their husbands to the Child Welfare Clinics are prioritized and seen first; however, additional strategies that reach other influential support members, such as mothers and grandmothers, are consistently needed as they have been shown to enable RF practices (45).

MIYCN strengthening has been implemented in Asia and Africa, showing that community mobilization, monitoring and evaluation plans, and national policies that promote MIYCN practices such as reducing advertisement of infant formula and extending maternal leave have all helped in improving MIYCN education delivery (5, 29, 46, 47). Ghana has made tremendous progress with strengthening MIYCN policies and plans at the national level, including creating a national nutrition policy. However, given that the system is largely decentralized and multiple entities are responsible for monitoring (48), it still lacks sufficient coordination. Additionally, the monitoring and funding of MIYCN training for health care workers and education to caregivers are largely contingent on external donor organizations (7, 49). Thus, strengthening the MIYCN training and education delivery system in Ghana will require government commitments similar to those documented by Sanghvi et al. (44): funding, national-level guidelines and policies, adequate materials, staff incentives, monitoring and supervision, and repeat staff training.

Strengthening the delivery of MIYCN training and counseling can also support the integration of RF into the existing MIYCN curriculum. Evidence shows that early childhood feeding interventions that included RF and were delivered by health care professionals improved RF behaviors, including emotional feeding, controlling feeding, and feeding restriction, and improved child weight outcomes (22, 50). Our findings support the integration of a new RF curriculum into the current MIYCN training system in a thoughtful way to limit the burden on the current system.

There were some study limitations. Neither the health care provider sample nor the caregiver sample was random, as key informants were used to guide recruitment. Additionally, the external validity of findings needs to be confirmed in other regions in Ghana.

In conclusion, this study demonstrated the importance of community-based approaches to understand how much MIYCN training and counseling are intertwined, indicating the need for interventions to address both using a multipronged approach that addresses barriers across all levels of the socio-ecological model, taking the local context into account. Future studies are needed to answer key question such as how to address caregiver barriers for optimal MIYCN, including social support and access to resources, and how to strengthen pre-service MIYCN education and practice training through well-standardized curriculums that include RF.

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Data Availability

Data described in the manuscript, code book, and analytic code will be made available upon request pending review of application and approval.

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