‘If he sees it with his own eyes, he will understand’: how gender informed the content and delivery of a maternal nutrition intervention in Burkina Faso

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Abstract

A growing body of literature urges policymakers, practitioners and scientists to consider gender in the design and evaluation of health interventions. We report findings from formative research to develop and refine an mHealth maternal nutrition intervention in Nouna, Burkina Faso, one of the world’s most resource-poor settings. Gender was not an initial research focus, but emerged as highly salient during data collection, and thus guided lines of inquiry as the study progressed. We collected data in two stages, first using focus group discussions (FGD; n = 8) and later using FGDs (n = 2), interviews (n = 30) and observations of intervention delivery (n = 30). Respondents included pregnant women, breastfeeding mothers and Close-to-Community (CTC) providers, who execute preventative and curative tasks at the community level. We applied Morgan et al.’s gender framework to examine intervention content (what a gender-sensitive nutrition programme should entail) and delivery (how a gender-sensitive programme should be administered). Mothers emphasized that although they are often the focus of nutrition interventions, they are not empowered to make nutrition-based decisions that incur costs. They do, however, wield some control over nutrition-related tasks such as farming and cooking. Mothers described how difficult it is to consider only one’s own children during meal preparation (which is communal), and all respondents described how nutrition-related requests can spark marital strife. Many respondents agreed that involving men in nutrition interventions is vital, despite men’s perceived disinterest. CTC providers and others described how social norms and gender roles underpin perceptions of CTC providers and dictate with whom they can speak within homes. Mothers often prefer female CTC providers,

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Introduction

In recent years, scholars have urged researchers, practitioners and policymakers to evaluate gender in existing health interventions and to design gender-sensitive interventions as a means of increasing effectiveness (Richards et al., 2013; Pratley, 2016; Morgan et al., 2017; Muraya et al., 2017; Steege et al., 2018). While gender-sensitive interventions come in many forms, women’s empowerment is recognized as one of the most promising approaches to gender-sensitive interventions in maternal and child health (Kraft et al., 2014). The rationale behind this is that in low- and middle-income countries women’s empowerment is associated with better health outcomes for mothers and children, including reductions in child mortality (Pratley, 2016; Taukobong et al., 2016). Evidence suggests that empowering women by increasing their access to resources and education enables them to initiate healthcare decisions (Colvin et al., 2013).

In nutrition, particularly, a lack of women’s empowerment has been identified as a key determinant for undernutrition (Bhutta et al., 2008). There is also an association between maternal decision-making power, especially concerning healthcare, and children who are better nourished (Carlson et al., 2015). Increasing women’s income control has been shown to improve children’s nutritional status (Ruel and Alderman, 2013). While pure cash transfers have shown limited positive effects on nutritional status (Van den Bold et al., 2013), agricultural programmes targeting women or focusing on women’s empowerment show better nutritional outcomes for mothers and children (Ruel et al., 2018).

In nutrition, the first 1000 days of life, i.e. from conception to 2 years of age, are recognized as a particularly vital period when maternal nutritional status affects children’s growth and development (Wrottesley et al., 2016). Maternal underweight during pregnancy is a risk factor for preterm labour and low birth weight (Han et al., 2011). Poor female nutritional status is also the main cause of anemia, globally (Stolzfus and Dreyfuss, 1998). Iron deficiency anemia during pregnancy is associated with a higher risk of preterm labor, thus lower birth weight (Allen, 2000), and an increase in pregnancy-related maternal mortality (Brabin et al., 2001). In Africa, micro- and macronutrient-supplementation has shown to lower mortality and increase birth weight (Wrottesley et al., 2016). However, women’s access to nutritious food is key: in Burkina Faso, a 2-year agricultural programme reduced anaemia and wasting prevalence among children, as well as maternal underweight (Olney et al., 2015, 2016). Women additionally achieved higher empowerment scores (Olney et al., 2016), showing how maternal nutrition and gender go hand in hand.

The goal of this article is to synthesize how gender affects the content and delivery of a nutrition-focused intervention in Burkina Faso, a country where more than half of pregnant women have anaemia (INSD, 2012). While not an a priori focus of the study, the importance of gender emerged early in data collection, and thus informed how the intervention was adapted in terms of content and delivery, which constitute two basic forms of adaptation (Castro et al., 2004), prior to the start of a trial. We first present how gender shapes maternal nutrition at the household level and then how gender shapes Close-to-Community (CTC) providers work (CTC providers are those who execute preventative and curative tasks at the community level; Steege et al., 2018). We also chose to focus on CTC providers, since they delivered the nutrition-focused intervention. This article thus builds on and fills a gap in the literature by describing how a maternal nutrition intervention can be designed in a gender-sensitive manner.

Methods

Study site and population

Burkina Faso is a landlocked country in Sub-Saharan Africa that ranks 182 of 189 countries in the Human Development Index (United Nations Development Programme, 2019). Income is low at US$731 per person in 2018, placing Burkina Faso among the poorest 10% of countries globally (The World Bank, 2018). Approximately 21% of Burkinafian children under five are malnourished (United Nations Development Programme, 2019), and the country ranks among the lowest 10% of countries globally in terms of gender equity across health, education, economic status and political representation. The average years of education completed are 1.6 years, which is exceptionally low even when compared with other low income, African countries (~3–6 years)[United Nations Development Programme, 2019]. The level of formal education is low for everyone but worse for women: in 2010, 57% of 15- to 19-year-old women had not received any formal education compared with 47% of men (INSD, 2012). Furthermore, educational attainment decreases with age, older women are the least likely to have received any formal education (7% of 50- to 54-year-old women have any formal education) (INSD, 2012). Nearly half of married Burkinafian women (42%) live in polygamy, and 44% of Burkinafian
women think that a man has the right to punch his wife (INSD, 2012). A majority (88%) of married women who earn money can decide for themselves how to spend their income (INSD, 2012). Only 8% of Burkinabe women have the principal decision-making power in terms of their own healthcare (INSD, 2012).

Our study site, Nouna town and its surrounding villages, lies in the northwest of Burkina Faso within the Boucle du Mouhoun region. About 30,000 people live in Nouna town and about 100,000 people live in the Health and Demographic Surveillance System (HDSS) site, within which we conducted data collection (Sie et al., 2010). In the region, women’s educational level and decision-making power concerning their income are near the country’s average (INSD, 2012). However, more than half of women (56%) living in Boucle du Mouhoun accept domestic violence, which is higher than the national average (44%) (INSD, 2012).

The proposed nutrition intervention

This research stems from a formative study conducted in preparation for a nutrition-promotion trial. We adapted South African maternal nutrition videos that female community health workers (CHWs) originally showed to mothers during home visits via tablets (Rotheram-Borus et al., 2011). The South African research team developed the video intervention using a human-centred design approach grounded on community feedback and iteration (Adam et al., 2019). We chose to follow their approach when adapting the video intervention: to maximize engagement of mothers and CTC providers throughout the adaptation process to ensure internal relevance particularly as several intervention components stem from a different cultural background. The Burkinabe intervention involves CTC providers visiting pregnant and breastfeeding mothers at home to show a set of maternal nutrition videos on a tablet. The videos cover different food groups and emphasize the importance of a varied diet. They feature a mother of a small child making choices about her own and her family’s nutrition regimen (Isler et al., 2020). CTC providers include CHWs, who are predominantly male, and Mentor Mothers (MM) who are exclusively female. CHWs are the government-installed personnel linking a community to its local health centre (Centre de Santé et de Promotion Social, CSPS), and they engage in all areas of prevention. MMs are older women who voluntarily accompany pregnant mothers to health centres, sharing practical advice and sometimes assisting during labour.

Sample and sampling

Respondents included pregnant and breastfeeding mothers (78 women), CHWs (5 males, 3 females) and MMs (exclusively female). Respondents were purposively selected because they could either receive or deliver the intervention, and they were able to speak and understand Dioula, the most commonly spoken local language. As a means of reflecting the population distribution, we sampled from the catchment areas of two urban and four rural health centres and were guided by CTC providers in terms of identifying pregnant and breastfeeding mothers.

Qualitative training and data collection

The study consisted of two phases. In the first phase, we gathered data on how to adapt video content. In the second phase, we sought feedback on the adapted videos and preferences for their distribution. Data collectors were female, bilingual (Dioula and French) and came from Nouna town or surrounding villages. They held high school diplomas and had previously conducted research. We worked with only female interviewers to ensure that mothers would be comfortable. We trained data collectors for 3 days on research ethics, maternal nutrition, video interventions, qualitative research and audiotaping techniques. We piloted in-depth interviews (IDIs) and focus group discussions (FGDs) and refined them in close collaboration with the data collection team.

Data collection took place between April and June 2018. We conducted FGDs in quiet areas located in or near health centres. For IDIs and observations, we visited eligible participants at home and delivered the video intervention using tablets. We interviewed 30 mothers and conducted FGDs with 48 mothers, 8 CHWs and 8 MMs. Initially, we intended to work exclusively with CHWs to deliver the video intervention. CHWs are predominantly male; only one health centre in the vicinity employs female CHWs. The reason for this gender imbalance is not clear. However, it became clear that some mothers were uncomfortable interacting with a male CHW. We, therefore, included MMs, and consequently conducted two additional FGDs with MMs and 15 observations of MMs, as well as 15 observations of CHWs. CHWs and MMs were thus involved to a similar extent. For each observation, two research team members joined a CTC provider for a home visit of a pregnant or breastfeeding woman. After initial greetings and explanations, the CTC provider sat with the woman and showed her the videos on a tablet. Research team members sat nearby to observe the CTC provider’s approach to video presentation, the woman’s reactions, how the CTC provider and woman interacted generally, other family members’ involvement and any other pertinent details of the setting in which video viewing took place. After the observation, the mother and CTC provider exchanged thanks and good wishes, the research team extended their own thanks and the team left. For a detailed list of data collection activities see Table 1.

Data analysis

We regularly debriefed the data collection team (McMahon and Winch, 2018). Bilingual research assistants transcribed and translated the audio-recorded data from Dioula to French. A member of the research team checked the transcripts for consistency and quality. We developed a codebook grounded on debriefing notes, and structured codes into principal and secondary categories. During initial coding, we refined the codebook and agreed on a final version, which two researchers applied to all transcripts. We incorporated data triangulation by comparing FGDS, IDIs and observations for consistency. Incongruities were discussed with a senior researcher within the study team.

We used existing gender analysis frameworks because they addressed our research questions and we expected them to provide a meaningful basis for our work. We began with the work of Deshmukh and Michael (2013) because it focuses on gender in mHealth within maternal, newborn and child health. However, this framework was too focused on the intersection of technology and gender to be helpful for analysis of our nutrition-related data. Ultimately, Morgan et al. (2016) informed our analysis, because their categorization scheme allowed for a more holistic analysis. Morgan et al.’s (2016) framework developed out of a review of existing gender frameworks and argues that gender is a power relation that is negotiated through (1) access to resources, (2) division of labour, (3) social norms and (4) decision-making. Where men are responsible to provide for the family, they are typically favoured in terms of access to resources, both within and beyond the household (March et al., 1999). Types of work are rewarded differently and typical female tasks like household maintenance and childcare are at the lower end of the hierarchy of rewards because they are unpaid and invisible (March et al., 1999). Social norms and rules help to
Table 1 Data collection activities

| Phase   | Type of data collection activities | Respondent groups   | Number of data collection activities |
|---------|-----------------------------------|---------------------|--------------------------------------|
| Phase 1 | Focus group discussions           | Mothers             | 6                                    |
|         |                                   | Mentor Mothers (MMs)| 1                                    |
|         |                                   | Community Health Workers (CHWs)| 1                                    |
| Phase 2 | Observations                      | Encounters Mothers-MM| 15                                   |
|         |                                   | Encounters Mothers-CHW| 15                                   |
|         | Focus group discussions           | MM s                | 1                                    |
|         |                                   | CHWs                | 1                                    |
|         | In-depth interviews (IDI)         | Mothers             | 30                                   |
|         |                                   | **Total FGDs**      | 10                                   |
|         |                                   | **Total IDIs**      | 30                                   |
|         |                                   | **Total observations**| 30                                   |
|         |                                   | **Total qualitative data collection activities**| 70                                   |

Table 2 How gender as a power relationship influences research process domains*

| Domain                                           | Objective response                                           | Accompanying considerations                                                                 |
|--------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Who participates as respondents?                 | • Pregnant or breastfeeding mothers                           | We sought to give primarily mothers a platform to express their ideas and included male as well as female CTC providers. |
|                                                 | • Male and female CHWs                                       | Male CHWs additionally gave us their perspective as male partners on the topic.             |
| When and where are data collected?               | • In the morning and afternoon                                | We planned data collection activities around cooking hours to allow for mothers to fulfil their household duties, and data collection took place in nearby health centres or participants’ own homes to avoid mobility issues. |
|                                                 | • FGDs in a private area of the health centre                 | We conducted gender-mixed FGDs with CHWs, which in retrospect was not ideal.               |
|                                                 | • IDIs and observations in participants own homes             |                                              |
| Who is present?                                  | • FGDs included only women except the CHW FGDs               | During FGDs with mothers, we intended to have only women present to encourage the mothers to speak. Mothers were told they could bring their small children along if necessary. |
|                                                 | • Small children were allowed to be present                  |                                              |
|                                                 | • During in-home video viewings, other household members and neighbours were permitted to join |
| Who collects data?                               | • Female interviewers from Nouna region                       | We worked with female interviewers who required more training, but who could more readily encourage female respondents to speak. |
| Who analyses data?                               | • Two female researchers from Burkina Faso and Germany       | We were open to consider gender as it emerged.                                             |

*Morgan et al. (2016) encourages researchers to ask the following questions to ensure sensitivity to gender throughout the data collection process.

decide in everyday life what behaviour is acceptable, but they can seem set and unchangeable, thus sustaining and justifying gender inequalities (March et al., 1999). As unequal access to resources and a set division of labour are justified by social rules, some individuals gain power over others, thus becoming key decision-makers who can then make decisions that reinforce their own power (March et al., 1999). By grouping categories of our codebook as subcategories within the categorization scheme outlined by Morgan et al., we were able to apply this framework to our research process (see Table 2) and content (see Results section). A process of merging, ordering and renaming those subcategories followed. The subcategories presented in the results thus emerged from our own analysis.

We conducted this research with the approval of the ethics committee of the medical faculty of Heidelberg University (S-140/2018) and the ethics committee of the Burkina Faso Health Ministry in Nouna (N 2018-07-/CIE/CRSN). We obtained written consent before all IDIs and FGDs.

Results

The four aspects that Morgan et al.’s (2016) gender framework emphasizes in relation to research content are echoed in our work, as they affect both nutrition at the household level (Section A) and CTC providers’ work (Section B): (1) access to resources (finances, farming/gardening, skills, experience and education); (2) division of labour (who is responsible for nutrition and children); (3) social norms (value of the extended family, mothers’ status, norms regarding contact between male CHWs and mothers); and (4) decision-making (who controls household finances, who decides about female CHWs’ activities). The focus on CTC providers’ work (Section B) emphasizes intervention process; this inclusion is based on an understanding that gender affects who delivers and/or collects information, the strengths and weaknesses of that person in relation to the task at hand, and the manner in which an intervention is introduced, received and perceived, among other things.

Section A: How gender shapes maternal nutrition at the household level

Respondents consistently emphasized access to resources, especially financial resources and access to farming and gardening, as the most influential factors in terms of guiding decisions about nutrition (Table 3). Social norms, namely how families are comprised, and restrictions that impede mothers’ decision-making power were also described at length, though with less depth. Issues regarding division...
of labour emphasized male partners’ general disinterest in household nutrition and expectations regarding a mother’s role in meal preparation.

Access to resources

In all FGDs and the vast majority of IDIs, respondents highlighted that financial resources present an extraordinary constraint to varied nutrition. Many mothers underscored the fact that they lack adequate financial resources to implement nutrition recommendations, particularly in relation to buying meat. This can lead to frustration, as expressed by a mother (40 years, 6 children) who reported: ‘We are often told to eat well, but when you don’t have the means it is difficult’ (1. FGD mothers, Nouna).

All respondent groups agreed that both male partners and mothers need to work together to finance household nutrition. Whereas male CHWs emphasized male partners’ challenges to provide adequate household resources, MMs went further and underlined that mothers’ contributions are vital. Many mothers make ends meet by operating small businesses to augment the nutrition allowance. One mother (31 years, 4 children) informed insight into her household’s arrangement: ‘He gives the sorghum and it is up to you to buy the meat (...). So, he struggles to provide for the mush and I (...) will try to obtain the sauce with my small business. We do it like that. One takes the hands and the other takes the feet’ (1. FGD mothers, Toni).

Mothers said that a mother’s relative powerlessness inhibits her from demanding more than the usually insufficient nutrition allowance her male partner provides to acquire cooking ingredients (consisting of grains/sorghum to bargain or money to purchase). All respondents said that most mothers cannot independently decide how much food is in their allowance although a small minority of mothers, those who have direct access to the family granary, can.

Many respondents emphasized that farming is the foundation of household nutrition and would also be a means to bolster it. Farming provides empowerment, as a mother summarized: ‘If we plant it, we can have it’ (IDI D14, Lekuy). Many mothers thought about gardening as a way to provide their family with vegetables. Others sought to achieve dietary variety by cultivating nutrient-rich foods. Mothers did not mention a need for male partner’s approval in relation to farming or gardening. The only barriers mothers talked about were general barriers such as a water supply and migrating animals.

Social norms

Social norms, or behavioural expectations at household and community levels, were second only to resource shortages in their power to shape family nutrition profiles. Many respondents described challenges of implementing nutrition recommendations in a context where: (1) large families eat together and (2) conflicts around financing nutrition can spark violence towards mothers.

Regarding household size, mothers emphasized that families are large, include one’s own biological children as well as others’ and additional extended family members. Rather than prioritizing quality, mothers described prioritizing quantity—attempting to ensure that everyone in the extended family receives enough food. Mothers also described the challenges of reconciling their own priorities (giving their children the best food possible) with the reality that co-wives or mothers-in-law may not share this view. ‘You marry, and you live with the whole family of your husband, in the extended family. It is not easy at all. If you want to take care of your household like (the mother in the video who has no co-wives), you will not be able to. But who wouldn’t want to be like her? Who does not want happiness?’ (1. FGD mothers, Nouna). The same social pressures can hinder pregnant or breastfeeding mothers from eating recommended foods, although in some families a pregnancy can justify that a mother receives special food. MMs confirmed that pregnant mothers sometimes eat better quality food than the rest of the family, especially in households with very limited resources.

Limited financial resources are also a common source of contention between spouses, who blame each other for bad nutrition quality. Respondents described how violence towards mothers is considered normal within marital disagreements. CHWs emphasized that mothers who insist on following nutritional recommendations will likely provoke marital tensions, and a mother who places unrealistic demands on her male partner is ‘asking to be beaten’ (2. FGD CHWs, Koussiri). CHWs said, however, that the nutrition videos presented did not nurture unrealistic expectations, but rather encouraged varied nutrition.

### Table 3 Morgan et al.’s gender analysis framework applied to a nutrition intervention

| Areas to examine gender | Answers divided by respondent type |
|-------------------------|-----------------------------------|
|                         | Mothers | MMs | CHWs |
| Access to resources     |         |     |
| (i) Financial resources | • General lack of household finances. X | X | X |
|                         | • Male partners control how much money is provided for nutrition. X | X | X |
|                         | • Mothers have own small income to contribute to the nutrition allowance. X | X | X |
| (ii) Farming and gardening Social norms | • Households can eat what they plant. X | X | |
| Social norms            |         |     |
| (i) Family size         | • A need to provide enough food for large, extended families lowers nutrition quality. X | X | X |
| Decision-making         |         |     |
| (i) Financial resources | • Male partners’ support is needed to make nutritional changes. X | | |
| (ii) Farming and gardening Social norms | | | |
| (ii) Nutrition           | • Male partners’ disinterest in nutrition as it is a mother’s domain. X | X | |
Division of labour
Division of labour refers to expectations about tasks by gender. Ideally, nutrition interventions would include male partners because they hold the final say in household finances; however, respondents described how health promotion (healthy nutrition and vitamins, breastfeeding and pregnancy) is largely considered a mother’s domain. CHWs said it is, therefore, a perpetual challenge that men, although men are usually uninterested in nutrition, they can unilaterally decide that certain types of food will always be present or absent in the household. Some mothers said that while they appreciated being shown the videos, they nevertheless felt powerless to make nutritional changes without the support of their male partners. Others emphasized that male partners should watch the videos themselves because receiving information second-hand through a wife made it less credible. A mother explained: ‘If he sees it with his own eyes, he will understand’ (IDI D11, Bagala).

Decision-making
Respondents agreed that male partners are the primary decision-makers with regards to household finances (including the nutrition allowance) and accepted practices (namely, what mothers should or should not do). Although men are usually uninterested in nutrition, they can unilaterally decide that certain types of food will always be present or absent in the household. Some mothers said that while they appreciated being shown the videos, they nevertheless felt powerless to make nutritional changes without the support of their male partners. Others emphasized that male partners should watch the videos themselves because receiving information second-hand through a wife made it less credible. A mother explained: ‘If he sees it with his own eyes, he will understand’ (IDI D11, Bagala).

Section B: How gender shapes CTC providers’ work
Respondents emphasized that social norms dictating contact between genders shape male and female CTC providers’ interactions with mothers and their families (Table 4). In less depth, CTC providers described how the influence of the division of labour can provide further challenges for female CTC providers. Specifically, women’s responsibility for household chores and children, and their dependence on spousal permission for their activities, limits their ability to work as CTC providers. Data suggest that gender is less influential than age in determining access to resources such as education and skills (technological proficiency, knowledge transfer, reflection/engagement). Experience in maternal domains (nutrition, childbirth and motherhood) is considered an advantage for female CTC providers.

Social norms
Social norms largely determine who will work as a CTC provider, what activities are acceptable for a male versus female CTC provider and how CTC providers are received in communities. CHWs underscored: ‘As a CHW, you need to be a sincere person’ (2. FGD CHWs, Koussiri). They highlighted the need to prove themselves as people of integrity in order to be trusted by the other gender and explained that establishing a strong professional identity was a general prerequisite for community acceptance of interactions across genders. Respondents (including mothers) said that mothers feel embarrassed at the prospect of discussing certain topics with men, including intra-household dynamics around nutrition financing. Some mothers additionally expressed feeling generally more comfortable talking with female CTC providers. In terms of religious taboos, CHWs explained that contact between male CHWs and mothers is difficult for the exceptionally conservative Wahhabi families (Wahhabism is a form of Sunni Islam centred in Saudi Arabia that demands separation of genders in public; Turrittin, 1988; Blanchard, 2007). We observed a male CHW convincing a Wahhabi household head to allow contact with his pregnant daughter-in-law, who was highly uncomfortable while her male partner suspiciously observed the interaction.

Table 4 Morgan et al.’s gender analysis framework for CTC providers

| Areas to examine gender | Answers divided by respondent type |
|-------------------------|-----------------------------------|
|                         | Mothers | CTC providers | Our observation |
| Social norms (i) Contact between male CHWs and mothers | • CHWs need to prove themselves as people of integrity when dealing with the other gender. X |
|                         | • Mothers prefer talking with female CTC providers. X |
|                         | • Religious taboos make contact between male CHWs and mothers difficult for some. X |
| Division of work (i) Household chores and children | • Female CHWs are primarily responsible for household chores and children and thus have limited time for CHW-related work. X |
| Decision-making (i) Female CHWs’ activities | • Partners need to approve of female CHWs’ activities. X |
| Access to resources (i) Education | • Male and female Community Health Workers (CHW) can read and write. X |
|                         | • Mentor Mothers (MM) did not receive formal education and cannot read or write. X |
|                         | • Male and female CHWs quickly learn to use a tablet, engage in the intervention and foster knowledge transfer. X |
|                         | • MMs struggle with tablet usage, engage less with clients but attract more mothers and children to listen during sensitization. X |
| (iii) Experience | • Female CTC providers appreciate and adhere to the same gender norms as mothers who thus conclude that they give reasonable advice on cooking and motherhood. X |
Division of work
CHWs described how female CHWs’ health-related work directly conflicts with their demands at home, as they are primary caregivers to their children and responsible for household chores, of which male CHWs are generally waived. A CHW explained why he thinks male CHWs can more easily complete their health-related work: ‘Women are busy, they have a lot of work to do. (…) Nobody commands men, they command themselves. They always have time’ (2. FGD CHWs, Koussiri).

Decision-making
Respondents agreed that a female CHW needs her male partner’s approval for health-related work. Some male CHWs perceived this as a constant struggle with female CHWs needing to seek a male partner’s permission for each task: ‘She has to go and do a job and her husband will tell her that she is not allowed to leave’ (2. FGD CHWs, Koussiri). Others, male as well as female CHWs, argued that this was more of a one-time issue wherein a female CHW needs her male partner’s permission but can then undertake all duties inherent to the job title: ‘The husband must not get upset. Before the woman was recruited for work, her husband was asked for permission and he agreed’ (2. FGD CHWs, Koussiri). Respondents did not raise this issue in relation to MMAs, who are older women, already grandmothers and mothers-in-law, and hold different positions within their households.

Access to resources
CHWs (male and female alike) can leverage their education and technological training in order to complete their work, whereas all female CTC providers can access their personal experience as mothers or caretakers for young children. Notably, male and female CHW participants (aged 22–38) had completed several years of formal education, while none of the MMAs (aged 50–61) had done so.

The only difference in practices we noted between genders was that male CHWs more readily shared their viewpoints compared with female CHWs, who shared their insights only after engaging with the study team for a longer period. Skills differed between CHWs and MMAs, likely depending on education or age. We describe them nevertheless since MMAs are in many health centres the only female alternative to working with male CHWs, making those skills consequently a difference between genders, too. In terms of technological proficiency, CHWs (male and female CHWs alike) quickly learned to use a tablet, whereas MMAs struggled to use the touchscreen and to remember how to display the videos. During most encounters between MMAs and mothers, either the mother took over the manipulation of the tablet or our observation team had to intervene to resolve a technological problem. In terms of fostering knowledge transfer, CHWs created and maintained a calm environment for video viewing, whereas MMAs were constantly interrupted by outsiders and curious onlookers during video viewings. An explanation we received is that CHWs are perceived as health workers, whereas MMAs are perceived as grandmothers who visit their neighbours. MMAs, however, could then promote the message to bigger groups though without the same level of detail. Many MMAs enjoyed the conversations that occurred within the context of video viewing as well as the passing on of personal experiences and advice in an informal setting. In terms of reflection and engagement, CHWs engaged with the research team on how to improve the intervention; whereas MMAs declined to critique or edit the approach.

Concerning tangible personal experience, some pregnant and breastfeeding mothers told us that they prefer female CTC providers who can leverage personal experience in cooking and motherhood. Mothers can more easily confide in female CTC providers who live in similar circumstances, face similar challenges, and are thus more relatable. Many mothers assured us, however, that they would consider prevention information independently of the CTC providers’ gender.

Discussion
We analysed our data in relation to (1) intervention content, namely how gender shapes maternal nutrition at the household level; and (2) delivery, namely how gender shapes CTC providers’ work by applying a gender framework that emphasizes four aspects: access to resources, social norms, decision-making and division of labour (Morgan et al., 2016). Our respondents emphasized the importance of access to resources. Mothers did not feel empowered to make nutritional changes that included costs but reported some control over cooking and gardening. Mothers emphasized that meals are prepared for the extended family and food quantity holds priority over nutritional quality. CHWs explained that limited finances lead to nutrition requests often provoking marital disputes. Gender norms also featured in how CTC providers were perceived and who they could talk to. Mothers often preferred female CTC providers, but these providers had to juggle their own domestic demands.

We found Morgan et al.’s (2016) framework to be an intuitive and useful tool and the four aspects it underscores in relation to research content proved to be useful main categories to structure our findings. Since the framework developed out of a review of existing gender analysis frameworks and draws on knowledge that has been part of development approaches for decades, this is not surprising. Morgan et al.’s (2016) framework makes this knowledge, however, accessible for health system researchers who have no background in gender analysis, which may be its biggest merit. As Morgan et al. (2016) emphasize that their framework does not provide a comprehensive list covering all aspects that can arise within the main categories, the framework is highly adaptable across research contexts.

We only struggled to classify female CTC provider’s experience bearing and raising children, but ultimately decided experience was a resource, just like educational knowledge, even if it is due to the gendered division of labour. Morgan et al. (2016) encourage using the framework within the WHO’s six building blocks of health systems (service delivery, human resources, health financing, leadership/governance, information and research, medical products/technologies) (WHO, 2007). During gender analysis, we found it, however, helpful to distinguish between intervention content, analysing the nutrition situation within households for gender, and intervention delivery, analysing CTC providers’ work for gender. This practical distinction helps to differentiate between the gendered challenges of the target audience and those of health service providers, and this distinction may be helpful for other researchers.

The analysis of our data using Morgan et al.’s (2016) framework shows how profoundly gender shapes intra-household nutrition considerations. We found access to resources to be highly influential on nutrition, as reflected in a review that found that increasing women’s power in relation to income control improves children’s nutritional status (Ruel et al., 2013). A more recent review found that nutrition-sensitive agricultural programmes lead to improved nutritional outcomes for mother and child with female empowerment increasing programme effectiveness (Ruel et al., 2018). In Burkina Faso, Helen Keller International conducted a programme that illustrated the impact of women’s access to resources: the 2-year
agricultural programme targeted women and integrated empowerment activities, leading to an increase in women’s agricultural production (Olney et al., 2015) and value of their agricultural assets (van den Bold et al., 2015). Ultimately, they reported a reduction in anaemia, diarrhoea and wasting in children aged from 3 to 12.9 months (Olney et al., 2015). Additionally, they found a reduction in mothers’ underweight and increased empowerment measures (Olney et al., 2016).

In this study, we found that mothers are responsible for nutrition and men are generally uninterested in this domain, similar to a Kenyan study (Muraya et al., 2017). That study found, however, that women could autonomously decide to enrol their children in a nutrition intervention (Muraya et al., 2017). The discrepancy between the high decision-making autonomy of women in that study compared with mothers in our own study could have financial roots. Muraya et al. do not report any fees charged prior to enrolling children in the intervention (Muraya et al., 2016, 2017) whereas our study was aimed at requiring mothers to alter purchasing patterns in favour of more costly (albeit nutritious) foods. Similar to our findings, Muraya et al. emphasize that engaging men in a meaningful manner and bolstering male interest in child nutrition is necessary to improve health outcomes in the long term (Muraya et al., 2017). Other studies also underscored family centeredness (Thuita, 2011). This recommendation is further echoed in a study from rural Gambia, which emphasized that giving women knowledge without the presence or buy-in of partners is insufficient, because men allocate resources and control finances (Mwangome et al., 2010).

Involving men in nutrition interventions is a relatively new topic. However, for health interventions more broadly, there has been a call to educate male partners or household elders as they control household finances and are often gatekeepers to health care (Molyneux et al., 2002; Tolhurst et al., 2008; Colvin et al., 2013; Scott et al., 2014; Osamor and Grady, 2016). In maternal and newborn health, efforts to involve men have been reported, and may provide insights. A recent systematic review found that involving men in maternal and newborn health is associated with increased healthcare-seeking behaviour, better home care practices, improved couples’ communication and more collaborative decision-making (Tokhi et al., 2018). In Burkina Faso itself, involvement of men was also associated with better post-partum practices (Daniele et al., 2018). In relation to joint decision-making and communication, our study identified challenges in the sense that men are expected to provide for their family and women are responsible for nutrition, but both parties suffer when unable to fulfil these expectations or discuss in a collaborative manner. Conflicts about finances have previously been described as a source of conflict, often leading to intimate partner violence (Jewkes, 2002), and low socio-economic status is a risk factor for intimate partner violence against pregnant women across Africa (Shamu et al., 2011). In our study, respondents agreed that integrating male partners into video viewing could facilitate understanding and, echoing the findings of Tokhi et al. (2018), mothers desired better communication with their male partners.

Our study found that gender not only affects mothers who receive nutrition interventions, but also female CTC providers who deliver them. Others also found that gender norms influence CTC providers’ work and personal lives (George, 2008; Feldhaus et al., 2015; Steege et al., 2018). In our study, mothers preferred female CTC providers. A Tanzanian study also documented preferences for same-gendered CTC providers to conduct home visits and offer reproductive health counselling (Feldhaus et al., 2015). A 2018 review, however, highlighted the complexity of the situation: while women can be less receptive to treatment uptake when visited by male CTC providers, male CTC providers may be more easily accepted by male decision-makers (Steege et al., 2018). We found that female CTC providers face gendered challenges to engaging in their work, which has again been seen elsewhere (Steege et al., 2018).

Table 5 Program implications for nutrition studies in similar settings

| Research process | Intervention agents | Target group |
|------------------|---------------------|--------------|
| • Plan data collection activities around cooking hours to allow for mothers to fulfil their household duties. | • Separate genders for FGDs (also intervention agents). | • Focus on foods that are affordable and can be grown easily. |
| • Data collection should take place near participants’ own homes to avoid mobility issues. | • Allow for mothers to bring along their small children. | • Encourage participation of all interested household members in the intervention (e.g. include co-wives, as meal preparation is communal). |
| • Separate genders for FGDs (also intervention agents). | • Pair women with female interviewers. | • Include husbands to foster their interest in nutrition and ensure their support (also financially). |
| • Design the intervention in a way that allows for female intervention agents to complete household duties and manage childcare. | • Work with female intervention agents. | • Focus on foods that are affordable and can be grown easily. |

In Kenya, bearing and caring for children and other household chores was found to be the most important determinant that makes leadership within the health system more difficult for women than men (Muraya et al., 2019). CHWs in our study additionally stressed that a wife needs her male partner’s approval for her professional activities. A lack of intra-household support can hinder female CHWs from joining the CTC workforce (Steege et al., 2018), and engaging in necessary work such as attending trainings (George, 2008). We did not directly hear of a case where a male partner prevented his wife from assuming work as a CHW, although this may be a result of selection bias. We observed that MMs, in contrast to female CHWs, had more freedom to attend intervention activities and did not require spousal permission. Others also report that older women in African societies oftentimes gain freedom, and that socio-cultural demands on them are to some extent released (Udvardy and Cattell, 1992). Cumulative life experiences are presumed to endow older women with adequate knowledge to make wise decisions, and some societies do not hinder older women in filling powerful positions such as that of household head.

Nevertheless, gender norms influence how study participants behave during data collection. We noted that male CHWs spoke up more readily than female CHWs. This is consistent with the literature suggesting that women engage less in gender-mixed groups than men (Sell, 1997). A way to address this would be to conduct separate FGDs with female CHWs, as women are known to speak up more readily in all-female groups (Sell, 1997). We also noted that MMs hesitated to critique the intervention. As in rural Burkina Faso men are traditionally responsible for governance and public developments (Coulbaly-Linagani et al., 2011), MMs may have felt ill-equipped to critique and change a public intervention.

As explicit recommendations might be helpful for those developing and implementing similar nutrition studies, we provide a Study Implications overview table (see Table 5). A strength of this study was its adaptability; when we noted that gender emerged as
important to the study, we integrated those concerns into our study tools and worked to directly examine the issue iteratively. A limitation of this study is that, consequently, we did not initially design the interview guides to investigate gender and failed to investigate the influence of age, comparing, e.g. how younger versus older women’s power varies in relationships. Moreover, we interviewed primarily mothers and we thus lack the perspectives of fathers (although male CHWs could share their perspectives as male partners). Finally, since IDIs and FGDs were conducted in Dioula, transcribed in French and presented here in English, messages could have been comprised or lost during translation.

Conclusions

Looking ahead, our study highlights two main opportunities to enhance gender awareness in the design of health and nutrition interventions in settings marked by extreme resource limitations. First, it is essential to involve male partners in maternal nutrition interventions as a means of facilitating the implementation of nutritional advice and fostering constructive couple’s communication. Second, we recommend employing and supporting female CHWs on a wider scale in Burkina Faso, particularly to support priority interventions with women. We also encourage interventionists to incorporate gender-sensitive components in the design and evaluation of health and nutrition interventions. Finally, we hope that our research sparks interest in examining whether and how the inclusion of gender-sensitive components in nutrition interventions impacts women’s empowerment and household nutrition.

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