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Ministry of Health

Qualitative Assessment of Maternal Nutrition Practices in Zambia

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Report written by: The Infant & Young Child Nutrition (IYCN) Project and the National Food and Nutrition Commission

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The Infant & Young Child Nutrition Project

1800 K Street NW, Suite 800

Washington, DC 20006 USA

Tel: (202) 822-0033

Fax: (202) 457-1466

www.iycn.org

IYCN is implemented by PATH in collaboration with CARE;
the Manoff Group; and University Research Co., LLC.

National Food and Nutrition Commission

Plot No. 5112 Lumumba Road

P.O. Box 32669

Lusaka, Zambia

Tel: (211) 227-803

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Executive summary

Malnutrition contributes substantially to child morbidity and mortality in low-resource settings. In particular, maternal nutrition has significant effects on both infant and child nutrition and maternal morbidity and mortality. In 2009, the Infant and Young Child Nutrition (IYCN) Project and the National Food and Nutrition Commission (NFNC) jointly carried out a qualitative assessment of maternal nutritional knowledge and practices in Zambia, where rates of malnutrition are considerable. The IYCN Project is working in the country to improve nutritional practices for mothers and expand access to healthy foods. Findings from this assessment will provide insight into maternal nutritional practices and will allow NFNC, IYCN, and other program implementers to continue to develop and promote maternal and child health interventions in nutrition.

Researchers collected qualitative data from two study populations in eight sites in Zambia, including 1) mothers and their key influencers, and 2) health facility staff, volunteers, and community leaders. The research team conducted focus group discussions (FGDs) with women younger than 30 years, women age 30 years or older, and men ages 25 to 40 years. The team also conducted in-depth interviews with 22 respondents, including eight community health volunteers (CHVs), seven clinicians, and seven community opinion leaders.

The study found that existing health and nutrition activities largely focus on health outcomes of children rather than pregnant and lactating women. Community members primarily receive nutrition education from antenatal care (ANC) clinics and value the health nutrition education provided by CHVs and clinicians. Community members are aware of the positive and negative impacts of certain foods on themselves and their children during pregnancy and while breastfeeding. Despite understanding the connection between nutritional behaviors and health outcomes for themselves and their children, however, mothers are often unable to adhere to appropriate healthy nutritional behaviors largely due to financial barriers. Families often make decisions about food purchasing and dietary intake based on household income levels.

Clinicians and community leaders point to the importance of clinic-based women's groups for the dissemination of nutrition education, for social support, and for the support of income-generating activities. However, women tend to describe social support in terms of what is provided by their husbands and, to a lesser extent, their families, friends, and neighbors. Both men and women support income-generating activities for women, but women face difficulties in starting small businesses. Clinicians and CHVs see agricultural practices and income-generating activities as potential solutions for preventing malnutrition, organizing and empowering women, and translating nutrition knowledge into practice.

Based on the study results, several recommendations can be made. These include promoting clinic-based women's nutrition and breastfeeding groups as sources of social support for community women. Clinic-based women's groups are also venues for disseminating ideas about income-generating activities and improving skill-building activities. Backyard gardens should be promoted as an income-generating activity for women and a means to facilitate healthy nutritional practice. ANC clinic staff should encourage men to accompany their wives to clinic visits by holding regular sessions for fathers or separate group activities for men. Community opinion leaders can also sensitize men to healthy nutritional practices and the nutritional needs of

mothers. Clinic staff and volunteers should receive greater support and incentives, nutrition education refresher courses, and materials such as visual aids and information booklets. Community leaders and external aid organizations should look for opportunities to enhance their communication about the allocation of food resources to vulnerable women.

Introduction

Malnutrition of both mothers and children is a key factor in child morbidity and mortality in low-resource settings. It contributes to micronutrient deficiencies in children, severe childhood illnesses, stunted growth, wasting, and mortality. Despite these outcomes, little attention is paid to nutritional practices in maternal and child health interventions,¹ particularly to maternal nutrition. Much of the focus of nutritional research and interventions in low-resource settings has been on child nutritional outcomes. Yet, maternal malnutrition has significant consequences for both infant and child nutrition and for maternal morbidity and mortality. Health programs and interventions need to devote more attention to maternal nutritional practices as well as the structural, relational, and behavioral factors that influence and constrain these practices.

The Infant and Young Child Nutrition (IYCN) Project works to improve nutritional practices and outcomes for mothers and children, prevent malnutrition in HIV-positive mothers, and prevent mother-to-child transmission of HIV. IYCN also works to develop community-based activities centered on healthy nutritional behaviors. Rates of malnutrition are considerable and are chiefly related to poverty and food insecurity, a large disease burden, or the lack of adequate access to food. In 2009, the IYCN Project and the National Food and Nutrition Commission jointly carried out a qualitative assessment of maternal nutritional knowledge and practices in Zambia, where there is a recognized need for more information on this topic. Researchers also conducted a quantitative study, the results of which are documented in a separate report.² The goal of collecting qualitative data on maternal nutritional behaviors is to provide greater insight into reasons for maternal nutritional behaviors, particularly during pregnancy and while breastfeeding. This will allow for the development of interventions more closely aligned with current nutritional practices and needs, as well as behavior change communications tailored to maternal nutrition. Key findings from this study will also be used to make nutrition policy and program recommendations.

¹ Horton, R. (2008). Maternal and child undernutrition: an urgent opportunity, *The Lancet*, Series on Maternal and Child Undernutrition, January 2008.

² National Food and Nutrition Commission of Zambia. 2009. *Quantitative assessment of maternal nutrition practices in Zambia*.

Literature review

The last ten years have been a period of heightened activity and research on maternal and child health issues in Zambia. In 1997, a US Agency for International Development (USAID)-funded assessment performed by LINKAGES, working in close collaboration with several government entities, recommended a demonstration project focusing on voluntary HIV testing and infant feeding in areas of high HIV prevalence. This assessment led to the establishment of the Ndola Demonstration Project, which demonstrated the utility and feasibility of community-based interventions involving several international, national, and local stakeholders; targeting vulnerable groups and communities; and focusing on health counseling and informed local behavior change. Ultimately, this project contributed to increased adoption of safer breastfeeding practices and decreased the practice of mixed feeding (Horizons, 2002). The success of the LINKAGES project has fostered the development of several related projects, such as FANTA-I and FANTA-II, which focus on issues of local food security and nutrition for vulnerable children (AED, 2008); prevention of mother-to-child transmission of HIV services and integrating counseling for HIV, infant feeding, and maternal nutrition into health and community services (AED, 2009); Planned Parenthood Association of Zambia-based “community clubs” focused on increasing male participation in maternal and child health issues (JOICFP, 2000); and several manuals and guidelines relating to nutrition, including the Nutrition Guidelines for Care and Support of People Living with HIV/AIDS (NFNC, 2004). Policymakers and program implementers have successfully integrated several components of these interventions into national and local health policies, strategies, and programs.

Despite the success of these interventions, the nutritional status of pregnant and lactating women has been a secondary concern. Little research has been conducted on the behaviors, sociocultural context, and environmental factors that influence maternal nutrition in Zambia. This may be problematic in a context where many pregnant and lactating women do not know their HIV status. This is especially true given the findings of Mehta et al. (2008) and Phiri et al. (2006), both of which showed that maternal nutritional status was a primary cause of mother-to-child transmission of HIV in urban and rural Zambian women, respectively.

There has been very little systematic focus on uncovering local dietary practices and local community support structures and linking these practices to malnutrition in pregnant and lactating women. However, several studies have looked at larger sociocultural and environmental constraints on nutrition behaviors in pregnant and lactating women. Hindin (2006) found that malnutrition of pregnant and lactating women was particularly high (13.5 percent) in Zambia compared to several other neighboring nations. The author found that, particularly in urban areas, malnutrition was related to the inability to influence health care decisions at the household level. In particular, the author suggested the role of men and senior women in constraining positive nutritional choices. A USAID country assessment (2003) suggested that the movement toward a heavily maize-based diet and away from more diverse traditional foods has contributed to both overall malnutrition in pregnant and lactating women and important micronutrient deficiencies. Gitau et al. (2005) discussed the role of droughts and periodic food crises in increasing overall and micronutrient deficiencies.

Ultimately, many recent interventions focus on nutrition and HIV/AIDS in Zambia, but these interventions do not target or fully incorporate all pregnant and lactating women. The existing literature has only scratched the surface on behavioral, sociocultural, and environmental factors associated with malnutrition and HIV/AIDS in this population.

Methodology

Researchers collected data through focus group discussions (FGDs) and semi-structured interviews. With assistance from the in-charge of the local health facility, IYCN and NFNC recruited focus group participants in three categories:

- Women younger than 30 years.
- Women aged 30 years or older.
- Men aged 25 to 45 years.

The team carried out 23 FGDs: 8 with the younger group of women, 8 with the older group of women, and 7 with men. Before the discussions started, members of the research team introduced themselves, explained the purpose of the study, and read the consent form to the group. Participants had the opportunity to opt out. Those who orally consented participated in the discussions. The discussions were tape-recorded and were conducted in the first language of the participants.

Clinics or community-based organizations in the study areas helped identify respondents for the in-depth interviews. The research team conducted 22 in-depth interviews with a range of participants in each study area, drawn from the following groups:

- Community leaders (e.g., heads of schools, neighborhood health committee members, local government representatives).
- Health facility staff.
- Community health volunteers.

The teams obtained written informed consent prior to the interviews.

The study was conducted in the catchment areas of eight different health facilities in Zambia: Bwacha, Chalata, Chawama, Chelstone, Chikobo, Katete-Luangwa, Lusaka-Matero, and Siavonga Mtendere-Naloba. Three of the sites were in Central Province, two in Southern Province, two in Lusaka Province, and one in Eastern Province.

Results

In-depth interviews with health facility staff, volunteers, and community leaders

The team conducted in-depth interviews with eight community health volunteers (CHVs), seven clinicians, and seven community opinion leaders (COLs). The respondents lived in the catchment areas of eight clinics and hospitals, including three in Central Province, two in Southern Province, two in Lusaka Province, and one in Eastern Province. Nineteen respondents had occupied their health care or community positions for more than three years, and 20 respondents

had lived in their current communities for more than three years. It appeared that the majority of respondents were well established within their respective communities and had occupied their positions for a relatively long period of time. These community members were key informants about malnutrition prevention, community support, dietary practices, nutrition counseling and education, barriers to positive behaviors, community challenges, potential solutions, and job-related skills and requirements for meeting the needs of pregnant and lactating women.

Malnutrition prevention activities

The primary form of malnutrition prevention activities among mothers consists of health education on beneficial dietary practices. These activities take place in communal settings, during clinic visits, or in the household. The respondents spoke very generally about a range of topics that health education addresses. The majority said that mothers are taught to eat three or more meals a day and to balance and diversify their diet, and they identify locally available foods when speaking of nutrition. This was consistent across study districts and CHVs, clinicians, and COLs. “We teach [mothers] to eat well-balanced foods found in the community when they come to us at the clinic,” said one respondent, a clinician from Katete. “We give cooking demonstrations [in the community] for them to really learn our advice,” said another respondent, a CHV in Chawama. A CHV from Matero added, “Mothers are educated on how to prepare nutritious foods and how to use locally available foods to come up with a balanced diet.”

Several CHVs also conduct more individualized outreach services focused on either nutritionally vulnerable mothers or mothers of vulnerable children. A CHV in Bwacha said, “There is need to follow up [in their household] to encourage the women to eat right.”

Although most respondents noted that many malnutrition prevention activities take place in the community, some respondents spoke of the activities’ limits. “There are no [malnutrition] prevention activities here. ... There are many challenges,” a COL from Bwacha said. A headman from Siavonga said that “there are no activities for adults...only sometimes for children,” and a clinician from Chalata said that “there are only programs for orphans, none for women or other groups.” The COLs, especially the headmen, noted the need for more prevention activities in their respective communities.

Interviews with clinicians indicated that they were significantly less involved in prevention practices, but they still emphasized the need to counsel pregnant women during antenatal and postnatal visits on beneficial foods for both themselves and their children. Several clinicians said they were not involved in community-based prevention activities. A clinician from Katete said, “We are not involved much in malnutrition prevention activities as a community, only at the children’s ward in the clinic.” Another clinician from Chawama noted, “We only practice Growth and Promotion Plus for children. We don’t do other activities.”

The interviews revealed discrepancies among the respondents’ understanding of the difference between activities focused on children and those targeting mothers. Nearly half of the respondents primarily discussed activities geared toward or for children. The other half were unclear or did not distinguish between target groups. Only two CHVs and two COLs specifically addressed the nutritional status of mothers when speaking of malnutrition prevention. “There are no programs of that sort in our community,” said a COL in Chelstone. “You will only find them

for children.” A CHV for 22 years in Matero described a decreasing emphasis on direct provisioning for mothers and an increased emphasis on resources that target health education for mothers and provide food and micronutrients for malnourished children.

At the community level, respondents see community groups and CHVs as central actors in malnutrition prevention activities, especially health education. Despite the lack of explicit emphasis on maternal nutrition, the majority of the respondents asserted that maternal health education is a principal means for preventing malnutrition in their children. “As members of the community, we go around and teach people how to feed small children,” said a CHV from Katete, matching similar comments from other respondents. The respondents most frequently recommend that women combine local protein and micronutrient-rich foods with staple meals, such as adding locally available groundnuts and soya beans to porridge and maize-based meals. In all but the sites of Bwacha and Siavonga, respondents noted that they also direct women to community- or clinic-based cooking demonstrations, though the frequency and perceived success of these demonstrations varies by district.

Few respondents mentioned direct handouts of either supplemental foods or micronutrients. One clinician from Chawama said that the local nutrition clinic provides nutrition education combined with monthly meal vouchers for supplemental foods for children and cooking supplies. Two CHVs and one clinician mentioned government- and nongovernmental organization-based programs specifically geared toward providing meal vouchers for mealie meal and beans for women and children (from World Food Programme), Plumpy’nut for children (from Valid International), and general food supplements (USAID, ChildCare, National Food and Nutrition Commission, and Child Survival). Only one respondent, a CHV from Bwacha, discussed the provision of micronutrients or HIV drugs, saying mothers receive health education, antiretroviral drugs, fansidar, insecticide-treated nets, and ferrous and deworming tablets, although the source(s) of these were not clear. The consensus across most districts was that CHVs and clinics focus on health education rather than direct provisioning of food or micronutrient supplements. According to one clinician, Matero successfully implements a community-based therapeutic care program providing ready-to-use therapeutic food packets for prevention and mitigation of malnutrition in children. However, the clinician does not discuss with the mothers how these packets could also provide them nutritional benefits, and he/she wondered whether this program provides any direct nutritional benefits for mothers.

Respondents expressed much more concern with subsistence activities, especially community gardens, as potential activities for malnutrition prevention among COLs. A number of COLs suggested diversified agricultural activities, such as growing energy- and nutrient-rich groundnuts and beans in addition to maize for the community as a whole and specifically for families of pregnant women. A COL headman from Chikobo said, “When it comes to nutrition issues, we try to discourage the people from relying only on maize when it comes to farming. We encourage them to grow other crops as well, such as beans and groundnuts.” One COL discussed the existence of a breastfeeding committee but said it is more to benefit children’s health than to address maternal malnutrition. The COLs were not aware of existing malnutrition prevention programs, but several said they would like to be involved in these programs and recognize that the programs are an integral component of malnutrition prevention activities. A COL in Chalata said, “As community leaders we are usually called and taught that we should encourage the

people to find ways of preventing malnutrition. We should be encouraging people to eat better foods.”

Community support and organizations

Respondents’ perceived level of support and presence of support structures for pregnant and lactating women varies by type of respondent and district setting. Similar to their understanding of prevention, respondents generally presumed that such support is for women as mothers of potentially malnourished children rather than for women who are at risk for malnourishment. A clinician from Chikobo appeared to recognize this when she said: “There is completely nothing, there is no support in the community [for mothers] unless you talk about children. If you bring children to the clinic you will be given help.” Another CHV from Chelstone said, “Only the women who are identified with malnourished children [receive support].” Three other CHVs and two COLs gave similar responses.

Clinicians and COLs perceived, in general, a lower level of support for pregnant and lactating women. A clinician in Katete said, “There is no support for pregnant women, only if you have HIV,” and a COL in Chelstone noted that “most of our [community] support groups are not very active and are dying.” The CHVs gave more varied responses. Several said the level of support in the community was very good. “There are many ways to get support in our community, many groups for women,” said a CHV from Chawama. However, CHVs often added that despite high levels of support for women, they face many barriers in the community, especially financial barriers. A CHV from Bwacha said, “These women are not able to sustain themselves due to lack of money, even though they may have the knowledge from us.” Nearly half of the respondents said that support specifically for pregnant and lactating mothers is insufficient or nonexistent.

The most frequently mentioned form of support for women is health education. Respondents said this support comes through community-based structures, including breastfeeding groups at three district sites (Chalata, Chelstone, and Katete), HIV and ART support groups at three district sites (Chawama, Katete, and Matero), nutrition groups at three district sites (Chawama, Chelstone, and Katete), and a women’s club at one district site (Chalata). Out of these organizational groups, only the HIV support groups were mentioned as active by more than one respondent from the site. Respondents from two other sites said breastfeeding and nutrition groups were active in the past but died out through lack of motivation, resources, or community support. In general, respondents expressed a desire to have these groups in their communities. A COL headman from Chikobo said, “We would like to have these groups back. I have heard of very successful groups in the Eastern Province. We should have them here too.” A CHV from Chawama noted that “these groups really help our community. If a woman is in a group and she sees that it is working, she will tell others in her area and they will also come in and join.”

Other forms of community support mentioned by respondents include informal food handouts from communal sources and the distribution of micronutrient supplements. One respondent noted that local women did not seem interested in the micronutrient supplements.

When asked about successful support activities and programs in the community, COLs mentioned only three forms of support: services for HIV-infected mothers, such as ARV and prevention of mother-to-child transmission (PMTCT) from community and external aid

organizations; health outreach support by CHVs; and support programs for malnourished children. Several respondents identified these three services as strong among the district sites, but there was less agreement on the strength of other forms of support, such as the breastfeeding and nutrition groups. However, the respondents, particularly the CHVs and COLs, suggested that these organizations are needed and are a valuable form of health education and support. One COL from Chikobo mentioned these groups go beyond health education by “empowering women from our community.”

In general, the respondents agreed on the positive aspects of nutrition education and acknowledged community willingness to support pregnant women and breastfeeding mothers through community-based organizations. However, one COL from Chikobo questioned this community support for poorer women, noting that “some pregnant and lactating women do not go for support because of fear of being laughed at, since they do not have shoes and have no soap to wash clothes.” Another COL from Chawama said, “We need to address the shame for seeking food coupons or help. This shame works against us.”

Respondents from all groups suggested that more resources are needed to maintain the current support organizations, the revival of breastfeeding and nutrition groups, and the formation of women’s support groups. These respondents also suggested handing out more food through these groups to strengthen nutrition education. “If we give food, more women will come for nutrition advice,” said a clinician from Siavonga. Three respondents suggested microfinance support for women’s groups. “The women would like to start some income-generating activities but there is no support for startup capital,” a clinician from Katete said.

Two COLs and one CHV suggested women’s groups focus on local gardens and subsistence activities to generate income and support malnourished women. A COL headman in Bwacha said, “What is given in the clinic is the theoretical part, but there is need for a practical part such as backyard gardens. They will encourage diversification so that there is better nutrition and more income generated.” The CHV from Chikobo suggested the community expand its communication to a wide range of stakeholders, including the government and other organizations, to obtain necessary resources for the gardens. Two clinicians proposed that breastfeeding groups increase their focus on exclusive breastfeeding and on identifying local foods with preparation demonstrations by nutrition groups.

In general, respondents recognize the need for increasing support for vulnerable women. “We need to come up with an organization that focuses on the welfare of women,” said a COL from Chalata, “because from what I have seen, some of our women are not living very well.”

Nutrition counseling

Nutrition counseling emphasizes both quantity and quality of food. In particular, counselors advise women to eat three meals a day and incorporate diverse local foods into their diets. “Nutrition counseling starts when women are pregnant,” a clinician from Bwacha said. “We tell them the importance of three meals a day and that they must eat nutritious foods.” Respondents frequently emphasize local foods, including *samp* (pounded maize) and *nshima* (a grain), with beans, porridges, soya, groundnuts, kapenta, and several fruits and vegetables, telling mothers these foods “produce enough milk for the baby.” A few also noted that “good food and good

milk makes the unborn child have a lot of blood,” as stated by a CHV in Chalata. One CHV in Chelstone found it challenging to advise women to eat local foods because many would rather eat more expensive meat during their pregnancy. “The women want expensive foods for pregnancy, they want meat, and we must tell them to get less expensive foods for the same nutrition.” One clinician from Matero said she counsels pregnant women about receiving micronutrient supplements, iron, and folic acid. One clinician mentioned extra counseling for HIV-positive mothers for breastfeeding. However, a COL in Chikobo suggested that such counseling might serve to stigmatize these women and suggested that “all community women should receive the same education so there are no divisions.” The respondents noted that such counseling primarily takes place in groups, such as community meetings or cooking demonstrations. Women who are pregnant, breastfeeding, or mothers of children under the age of five years are also offered individualized counseling.

In general, respondents said that women are unable to follow the nutrition advice they receive in counseling. The majority of respondents said women were simply unable to procure or afford the recommended foods due to lack of money or means. Respondents in Chawama, Chikobo, and Siavonga attributed this to women’s cooking preferences, lack of motivation, or an inability to understand the importance of the advice. A CHV from Chelstone reflected several respondents’ comments in saying, “Some [women] would want to follow [the counseling] but are too poor to afford the foods.” A CHW from Bwacha said, “Some women follow advice and some do not. For those who do not, it is because they lack money and maybe because of their health.” Nearly three-quarters of the CHVs and clinicians noted that women understand the advice and the importance of adequate quantity and quality of foods for both themselves and their children but can only continue with cheaper, less nutritious local foods. Another CHV said that there are too many competing priorities for what little money women may have to focus on nutrition. COLs, especially, related this lack of nutritional quality in diets to changing agricultural and market practices that detract from the “traditional” diet of diverse local foods.

Health workers primarily monitor the weight gain of pregnant and breastfeeding women to identify those who are vulnerable for malnutrition and in need of counseling, respondents said. It was unclear how often this monitoring occurred, but one clinician in Bwacha said that it needs to be more frequent because “mothers are left out.” The clinician noted that much more attention is given to infants’ weight gain than to mothers’ weight gain. Several clinicians said they can only weigh women when they come in for antenatal visits, but they first need more outreach services to better identify vulnerable women and get them to the clinic. Clinicians stressed the need for more community volunteers for this task because the volunteers know the community. One CHV from Chikobo supported this suggestion, saying, “I am also a member of this community, so I know which women are failing to make ends meet.” Monitoring weight gain and counseling vulnerable women on how to achieve adequate weight gain are some of the primary forms of outreach services that CHVs provide, they said. Several noted that they give extra attention to women who they perceive as vulnerable to malnutrition from their pale or “weak” appearance and to unmarried women. One CHV mentioned the importance of relying on neighbors to notify them of vulnerable women that may be hard to reach. Another stressed the need to conduct home visits to determine what foods were in the household and to dispense individualized nutrition advice.

Positive health behaviors

The main positive health behavior cited by nearly all respondents was the desire to receive health education and the willingness of pregnant and breastfeeding women to change their dietary practices and behaviors. At least one respondent from every site agreed that pregnant women want their advice. One CHV noted that women do everything they can to follow advice and are very resourceful at finding good foods despite lacking money. Another noted that participation in nutrition meetings and nutrition groups is high among women when these meetings and groups exist in their communities. Several clinicians noted a high rate of women complying with HIV-treatment regimens, and a clinician from Katete reported that nearly all HIV-infected women are breastfeeding regardless of their HIV status. A CHV from Matero also noted that nearly all women were exclusively breastfeeding. Respondents also consistently noted high rates of women going to the clinic for care, particularly for antenatal visits. Two CHVs said that women in their communities, despite difficulties, were attempting to organize income-generating activities and backyard gardens to purchase or grow nutritious foods. Three respondents in Chawama, Chelstone, and Matero said they have observed less malnutrition in recent years due to the success of nutrition education and practices.

Individual and community challenges

Despite women's interest in learning about positive health behaviors, respondents said that women face several barriers to practicing these behaviors. Obstacles include women's lack of financial resources, competing priorities, and lack of local resources. Only two respondents noted that women chose to engage in negative behaviors or willfully disregarded advice on positive behaviors for personal or cultural reasons. A clinician in Chelstone said, "Women only want to eat nshima because that is what is eaten [in their community], but there is need for fruits and vegetables." A clinician in Chawama noted that "people are different and want different foods. Sometimes this is good but not always so." However, most respondents recognized women's limitations to implementing their advice.

Other negative behaviors mentioned by the respondents include:

- Improper use of micronutrient supplements. One clinician in Matero said women do not take micronutrient supplements as they should. The clinician did not clarify the availability of these supplements in the community.
- Limited duration and non-exclusive breastfeeding. Despite the success of exclusive breastfeeding messages, one CHV and one clinician noted that women still only breastfeed for a relatively short duration. A CHV in Matero said she has seen women feed their babies foods other than breastmilk even when they report practicing exclusive breastfeeding. A clinician in Katete observed that very few women breastfeed for more than six months.
- Lack of family planning. Five respondents noted the need for education about family planning. Several respondents said that women in their communities are unwilling to use contraception because of family pressures to have many children or a belief that contraception leads to infertility or future birth defects. "Some [women] say they can't go on family planning because 'the Lord has blessed me with fertility,' but this is wrong. A lot of nutritional problems are due to having too many children and not being able to feed them properly," said a CHV in Siavonga.

Poverty. Nearly every respondent noted poverty as a challenge to maternal nutrition. Several CHVs said the majority of women in their district are too poor to afford adequate foods. Health education is not enough to improve women's nutrition. "They know what they need to eat, but the money that they have is not enough to get these things," a CHV said. A clinician and a CHV noted that women have difficulty finding adequate foods because they are not always available in local communities.

Youth, lack of education, HIV infection, lack of occupation, and relationships with men contribute to poverty and women's inability to maintain adequate nutrition, several respondents noted. Often, men do not have jobs or do not want to work, which means the family has no income. Many vulnerable women are in polygamous marriages, which means more people are sharing limited resources. Some women are pressured by their partners or their families to have more children even when they don't want to, leaving the women unable to provide for their children or themselves, one CHV noted. This same family pressure prevents many women from exhibiting positive nutritional behaviors. "Some [men] don't want their wives to go for antenatal care or advice because they fear their wives will meet other men, while others fear that [their wives] may get tested for HIV and found positive," said a clinician in Chikobo. "For others, it's just illiteracy that they don't let their wives go."

Agriculture and subsistence. Participants also discussed agricultural or subsistence activities in relation to nutritional challenges. One CHV in Bwacha noted that women often sell the most nutritious foods they grow for money, leaving less nutritious foods for themselves and their families. In addition, seasonal phenomena such as droughts and heavy rains damage food yields and destroy local backyard gardens, harming local food availability. Several respondents noted families' struggles to maintain enough food year-round. A CHV from Chalata said, "By December you will find that people have run out of food, so this means that people won't have enough food to eat until the next harvest period. This period of hunger has a very bad effect on pregnant and lactating women."

Other challenges. Some respondents also mentioned HIV/AIDS as a serious challenge for the community as well as for the success of nutrition interventions. A CHV in Katete stated, "HIV makes many difficulties for nutrition." Other challenges mentioned less frequently by respondents include women's negative attitudes toward nutrition, lack of knowledge on proper weaning foods for young children, lack of knowledge on food preparation, and the added difficulties of finding food for women who are weak from malnutrition.

Potential solutions for individuals and communities

The respondents suggested a diverse array of potential solutions to meet these nutritional challenges. Nearly half of the respondents suggested supporting income-generating activities for women, such as agricultural activities like backyard gardens and women's cooperatives. One COL said he had seen a neighboring district implement similar activities with great success and wished to implement them in his own community. A CHV said the poorer women in her community want agricultural skills to earn income, but they don't know how to get them. "If they have [the skills], they can offer services to the community, get food, and earn money." Respondents suggested seeking skills and support from external aid organizations and

government organizations such as the Ministry of Agriculture and forming women's support groups such as nutrition clubs. These clubs could take on wider mandates beyond health education to include practical demonstrations and organizational activities to generate money. These types of activities will need initial support in the form of seed, food, and monetary resources to achieve success, respondents noted. Two respondents suggested focusing on building these activities into sustainable programs rather than obtaining "handouts."

Other solutions include:

- Conducting a wider community sensitization campaign to educate the overall community, community headman, and men in general about women's health and nutrition issues.
- Continuing health education for pregnant and lactating mothers. "Women still have many negative attitudes about these issues," a clinician in Chelstone said. However, several respondents noted the need for broader community education and involvement to create a supportive environment for pregnant and lactating women.
- Involving men in nutritional education and related activities. Men could be instrumental in decreasing health and nutritional barriers and increasing the involvement of other men in these issues. Men could also become engaged in education about HIV/AIDS, especially testing, and in family planning education and activities, both of which influence women's nutritional status.
- Increasing community integration and communication among clinics, health care centers, and government bodies such as the Ministry of Agriculture to encourage women, especially vulnerable women, to regularly visit the clinic and to access resources for health, nutrition, and income-generating activities. A COL in Chawama said, "We need partnerships with the community and health centers. The people should not be afraid of the staff at the center. These people are there to help them and we need to work together as a community."
- Training and recruiting hiring more CHVs. The majority of CHVs interviewed said they cannot properly educate and monitor all of the women in their catchment areas as well as perform their additional duties. The women they do reach are more likely to develop positive health and nutrition behaviors for themselves and their children. However, CHVs are not able to reach all women or to focus on vulnerable women or women who are unwilling or unable to change their behaviors. Several respondents said that increasing the number of CHVs in each community would enable them to more effectively disseminate health and nutrition education in their respective communities.

Health provider challenges

Nutrition training. The majority of the 15 CHVs and clinicians interviewed said they do not have adequate training to improve women's nutrition. Of these service providers, all but three (one clinician and two CHVs) have received additional nutrition training, but only one-quarter of the providers feel that their training has been adequate. The remaining three-quarters said their training inadequately prepared them for work in resource-poor settings and changes in nutrition knowledge, practice, and technology. Nearly all respondents noted the need for regular refresher courses to reinforce their learning, provide practice demonstrations, and keep them up to date. The most frequently noted form of training needed was nutrition-promotion training (four providers), followed by infant and young children feeding (three providers), breastfeeding (three

providers), and PMTCT treatment (two providers). Of the three respondents who mentioned the organizations that provide these trainings, one received training from the local clinic, one received nutrition courses from the Ministry of Agriculture, and one received refresher courses from Japan International Cooperation Agency.

Health education materials and tools. The 15 CHVs and clinicians were nearly unanimous in expressing the need for more visual teaching materials, resources for demonstrations, and information booklets for pregnant and breastfeeding women. The providers—CHVs in particular—mentioned a need for breastfeeding charts, posters (especially showing local foods in food groups and demonstrating hygienic practices), information leaflets and booklets, picture information cards, nutrition magazines, and demonstration equipment. One CHV said that local women are not always interested in hearing them talk and likely would be more interested in visual materials. A clinician noted the need for more manuals on PMTCT for peer counselor training.

Staffing and motivation. CHVs and clinicians cited staffing as another challenge for meeting the health and nutrition needs of their communities. Many mentioned the need for incentives, such as an allowance, for CHVs to support and recognize their hard work. The challenge of the job and the lack of incentives contribute to wider staffing and community volunteer problems, several respondents said. Three respondents from three different districts noted that they are severely short-staffed, which prevents them from adequately addressing nutrition in their community. A CHV from Chelstone said:

Nutrition is part of the job, but unfortunately nutrition is overshadowed by all of the other things that receive more attention, such as HIV/AIDS. And in the case of pregnant mothers that come [to the clinic], we are so busy checking the well-being of the baby and the mother that nutrition is not dealt with. Due to the handicap in manpower, vulnerable women are not attended to as they need to be, and having more staff would help as then we can address some of the nutrition challenges facing pregnant and lactating women.

Potential solutions for health providers

About one-quarter of CHVs and clinicians noted the need for more integration of service providers with the community; more cooperation from and with men, especially community headmen; and a revival of community breastfeeding and nutrition groups. Most CHVs said these activities might lead to a more supportive environment for working and for training women in health and nutrition issues. Other solutions suggested by service providers include:

- Increasing the availability of health tools and resources, such as gloves for emergency deliveries, food supplements for highly vulnerable women and children, and finances to start and maintain community nutrition and breastfeeding groups.
- Making a nutritionist available at either clinics or hospitals to provide community volunteers a point of contact for regular nutritional advice.
- Offering transportation options, particularly bicycles, to CHVs so they can reach all women in their catchment areas as often as is needed. One CHV said that transportation is a large barrier to reaching women who are especially vulnerable to malnutrition. If she had a bicycle

she could make home visits “so I get to know and understand how mothers live in their home environments.”

FGD with mothers and key influencers

Researchers conducted 24 FGDs on maternal nutritional practices in the same eight study sites as the in-depth interviews. In five sites (Bwacha, Chawama, Chelstone, Chikobo, and Katete-Luangwa), the research team conducted FGDs with two groups of mothers with children less than 24 months of age (30 years of age or older and younger than 30 years) and one group of men with children less than 24 months of age (specifically ages 25 to 45 years in Chelstone and Katete-Luangwa). In Chalata, the team conducted FGDs with two groups of mothers (30 years of age or older and younger than 30 years) and two groups of fathers (younger and older). In Lusaka-Matero and Siavonga Mtendere, the team conducted FGDs with two groups of mothers (30 years of age or older and younger than 30 years) and no male respondents.

Maternal nutritional practices

The research team sought to understand whether nutritional practices and knowledge differ among nonpregnant, pregnant, and breastfeeding mothers. Interviewers asked respondents about nutritional behaviors and the effects of nutrition for these three categories of women, including respondents’ own behaviors. The data are presented in terms of these three groups.

Daily activities. Women discussed a range of daily activities and household chores. Upon waking up, women carry out initial chores such as sweeping, cleaning the kitchen, starting a fire, and then preparing breakfast for their children and husbands. One respondent older than 30 years from Bwacha said that upon waking, she will “clean the toilet, boil water for bathing, clean the surrounding [home], and prepare food for my husband going for work.”

Soon after breakfast is prepared, women begin planning for lunch. A respondent younger than 30 years from Chalata said:

When I wake up in the morning I sweep the house and then clean the kitchen. At about 06:00 hours I prepare breakfast for the children and then continue sweeping. At around 10:00 hours I start looking around for food that I can prepare for lunch. At 12:00 hours I prepare lunch so that the children can have a decent meal.

In the morning and early afternoon, women also go to the market, work in their gardens or farms, chop food, and pray. After lunch, women said they return to the fields, bathe their children, and prepare supper.

For some women, daily activities center on farm work. A woman younger than age 30 from Chikobo said:

When we wake up we prepare breakfast, we go to the field and dig up some sweet potatoes that we cook for breakfast, and we also pick some vegetables like sweet potato leaves or rape that we will cook for lunch. After breakfast, we take some maize to the hammer mill for processing. When we return we cook lunch and in the evening we cook supper. And tomorrow you do the same thing.

Another woman younger than 30 years from Chikobo described what it is like to work full time:

Well, in my case, I have a job in a salon so my day is kind of different. When I wake up, I wash my face and then start preparing breakfast. Before I leave for work I have to make sure the children have eaten, I have to clean the house, wash the nappies, and I have to fetch water. When I go for work, I will be there the whole day and I will only return in the evening. When I get home I have to prepare supper. Lunch for the children is prepared by the girl that I live with. I just tell her what to cook and she also helps look after my first-born child.

Men described similar daily activities and chores for women. One young male respondent from Chalata said:

In the morning if my wife is still in bed I wake her up so that she can start cleaning the home in order for it to look nice. My wife also heats some water and then sends a child to call me when the water is ready. She also prepares breakfast for everyone. After breakfast we give everyone chores for the day. When we get back in the evening we find out if all the chores that were given out have been completed. If not, they are transferred to the next day. These tasks include working in the garden, picking maize cobs from the field, or clearing a field.

Frequency of meals. Women who are not pregnant tend to eat three main meals each day. Some women also eat snacks between meals. Women who eat fewer than three meals a day or eat in-between meals typically do so because of the cost of food or because they work outside the home and do not have time to prepare meals. One female respondent said that she and other women she knows do not like to eat between meals. Another said that women may lose their appetite as a result of preparing food for their families and therefore do not eat much.

Women commonly said that when they were pregnant, they felt nauseous, lost their appetites, felt hungry but physically unable to eat, and disliked foods they typically consume while not pregnant. One female respondent younger than 30 years from Chikobo said:

I also had trouble eating during my last pregnancy. I would feel hungry but I was unable to swallow anything. I felt like there was something blocking my throat. And even when I tried to eat something I would find that I would be unable to stand the smell.

Men also noted that their wives were poor eaters while pregnant. Women said they more commonly lost their appetites earlier in their pregnancies and ate more during the final months of pregnancy. Several women said they did not lose their appetites while pregnant. Both female and male respondents said that women regained their appetite while breastfeeding. The respondents described breastfeeding women as frequently being hungry and eating as often as they could or as food was available.

Some men from both age groups said that women are able to eat more frequently than men because women remain at home and prepare food, while men work away from home. Several

men said they go to work without eating and have only one main meal per day, either during the day or at the end of the day. Two female respondents also said that they eat more than their husbands. In general, however, female respondents did not differentiate between how often men and women ate as frequently as did male respondents.

Women said that they consider their husbands' appetites when allocating food portions, but that they also limit portion sizes so they have enough to feed their children. Similarly, a male respondent said that food scarcity causes men to sacrifice their food intake so that their children can eat more. Respondents indicated children have more frequent eating patterns and eat more snacks. "Under-fives eat uncountable times, as many times as they are hungry. They tend to cry for anything and they are given [it]," said a woman in the older age group from Bwacha.

Eating behaviors, including the order of eating and who eats with whom, differ from household to household, researchers found. Most respondents said that small children younger than five years are fed separately from the rest of the family. In some households, the rest of the family eats together, either from the same plate or from separate plates. In other households, men eat separately or eat with older male children, while younger children and older female children eat with their mothers. Other respondents said that children and parents eat separately.

Types of food consumed. Nonpregnant, pregnant, and breastfeeding women eat similar foods, researchers found. Among the notable differences mentioned by respondents, nonpregnant women more frequently eat nshima and do not eat legumes or nuts. The majority of female respondents said that during pregnancy they either did not eat "good" foods or had a hard time eating foods that they typically ate while not pregnant. Respondents had mixed responses about whether women were able to eat "good" foods while breastfeeding. In general, many women said they do not eat nutritious foods due to a lack of money and available resources.

Both female and male respondents said that women were "picky" eaters during pregnancy, but women said they regained their appetites when breastfeeding. Several women discussed eating soil. Others mentioned that soil should not be consumed during pregnancy, therefore suggesting that it is a common practice. Types of foods consumed by nonpregnant, pregnant, and breastfeeding women, as reported by respondents, are presented in Table 1.

Table 1. Types of food consumed by nonpregnant, pregnant, and breastfeeding women

Type of food	Nonpregnant women	Pregnant women	Breastfeeding women
Starches	Nshima, samp, rice	Nshima, samp, bread, porridge	Nshima, samp, bread, porridge, sweet potatoes
Vegetables	Rape, sweet potatoes, potatoes, pumpkins	Sweet potato leaves, cassava leaves, pumpkin leaves, rape, okra, lemons	Cassava leaves, sugarcane
Fruits	Bananas, watermelon	Apples, bananas	Bananas
Legumes and nuts	--	Beans, groundnuts, groundnut sauce	Beans, groundnut sauce
Meat	<i>Kasepa</i> (small fish)	<i>Kapenta</i> (small fish), liver, chicken	Kapenta, chicken, pork
Dairy	Milk, eggs	Milk, ice cream	Sour milk, eggs

Type of food	Nonpregnant women	Pregnant women	Breastfeeding women
Sugars, oils, teas, and traditional drinks	Tea, <i>munkoyo</i> (a traditional drink), <i>freezit</i> (iced drink)	Tea with milk, <i>maheu</i> and <i>chikanda</i> (traditional drinks), <i>chibuku</i> (alcoholic)	Black tea, <i>maheu</i> , <i>munkoyo</i> , <i>chibuku</i>

Nutrient intake. Nshima and other starchy foods were some of the most commonly mentioned foods consumed by nonpregnant, pregnant, and breastfeeding women. However, all groups of women also frequently mentioned eating leafy greens rich in iron, calcium, and folic acid, such as pumpkin leaves, sweet potato leaves, and cassava leaves. Few women mentioned sugarcane, which in Zambia is enriched with vitamin A. Women, particularly those breastfeeding, also frequently mentioned eating vegetables in groundnut sauce, which is similar to peanut butter and high in protein. Beans, another protein source, were mentioned less frequently. Women consume few protein-rich animal products such as eggs, chicken, and pork, according to the respondents. They more frequently eat *kapenta* (small fish), which are cheaper than other animal products.

Some women said that fruits, which are rich in vitamins, are difficult to access, while others said they eat fruits fairly regularly. Women occasionally mentioned fried maize and vegetables fried in cooking oil, but some women said they avoid oily foods during pregnancy. The respondents did not mention iodized salt in their diets, although women said they eat foods containing cooking soda, which is processed from ash. Women seem to get their calcium largely from leafy greens; few said they consume dairy products. Black tea, which can inhibit iron intake, was mentioned by a few respondents. Women said they drink black tea in the morning and in the afternoon as a snack.

Nutritional knowledge

Education about nutrition. Respondents most often receive information about nutritional practices from antenatal clinics (ANCs) or clinics for children younger than five years. Women also said they learn about nutrition from their peers, including neighbors, friends, elders, and parents. A smaller number of women mentioned learning from experience, from their schooling, and from media sources such as television and radio programs and magazines. Men mostly mentioned the clinic as a source of information for women. Two men also cited community volunteers, peer educators, and organizations such as World Vision, YMCA, Plan, and USAID as sources of information about a healthy diet.

Foods to eat or avoid. Interviewers asked respondents about good foods for pregnant and breastfeeding women and about foods that nonpregnant, pregnant, and breastfeeding women should avoid. For pregnant and breastfeeding women, respondents identified good foods as vegetables, fruits, groundnut sauce, and traditional drinks. They said pregnant and breastfeeding women should avoid chilies, lemons, parts of the chicken traditionally given to men, alcohol, and tobacco. Some items, such as eggs and *kasepa*, were mentioned in both groups. The data for pregnant and breastfeeding women are summarized in Table 2.

Table 2. Respondents’ recommendations for foods to eat or avoid during pregnancy and breastfeeding

	Foods to eat	Foods to avoid
During pregnancy	<ul style="list-style-type: none"> • Starches: nshima, porridge • Vegetables: sweet potato leaves, cassava leaves, okra, other vegetables Fruits • Legumes and nuts: beans, groundnuts • Meat: kasepa • Dairy: milk, eggs • Drinks: <i>chibuku</i> (alcoholic traditional drink) 	<ul style="list-style-type: none"> • Fruit: lemons • Meat: chicken (including the gizzard, which is traditionally given to men), kapenta, kasepa, bubble fish, pork • Dairy: eggs • Other: oily food, cold food, soda (salt), chilies, sugarcane, fried maize, alcohol, tobacco, soil
While breastfeeding	<ul style="list-style-type: none"> • Vegetables: cassava leaves, pumpkins leaves, other vegetables • Legumes and nuts: groundnut sauce • Drinks: <i>chibuku</i>, <i>munkoyo</i>, <i>maheu</i>, “shake-shake,” black tea, tea with milk 	<ul style="list-style-type: none"> • Fruits • Vegetables: sweet potato leaves, okra Meat: chicken gizzard (traditionally for men), mutton, pork, fish • Other: soda (salt), alcohol, tobacco, chilies

Foods with positive effects. Both the female and male respondents displayed knowledge of the link between maternal dietary intake during pregnancy and the healthy development of the fetus. Several female and male respondents also noted that healthy dietary practices were important for mothers’ health. Women listed a range of foods as “good” to eat while pregnant and as having positive effects on the growth of the fetus, including vegetables and fruits, legumes and nuts (e.g., groundnuts), meat, fish, milk, eggs, nshima, and *chibuku* (an alcoholic traditional drink). Men named a similar list of “good” foods for pregnant women, including vegetables (e.g., sweet potato leaves, cassava leaves, okra), fruits, legumes, meat, *kasepa* (small fish), eggs, nshima, and porridge.

Respondents considered the following foods as beneficial for milk production while breastfeeding: vegetables including vegetables in groundnut sauce, cassava leaves, and pumpkin leaves. They described vegetables as a source of vitamins. Respondents said foods that they consider sources of blood are important for fetal development, as evidenced in these statements:

Eating a lot of vegetables gives one a lot of blood, which is good for the baby. (Male younger than 30 years, Chalata)

[Women] should be eating a lot of food that has blood, because if they are not eating this kind of food they will lose a lot of blood during delivery and they might even die. (Male, Chawama)

One female respondent older than 30 years from Bwacha said that beans are good for energy and “meat is for blood,” which suggests knowledge of meat as a source of iron. Respondents also mentioned local traditional drinks, such as *chibuku*, *munkoyo*, *maheu*, and “shake-shake,” as well as black tea or tea with milk as being beneficial to breastfeeding mothers.

Foods with negative effects. The majority of respondents said that women who are not pregnant do not have to avoid any specific foods and can eat what they wish. However, several respondents noted that women are not supposed to eat the back of a chicken (which contains a little flesh) or its gizzard, as these are parts reserved for men as a sign of respect. Nonpregnant women should also avoid beer and smoking. One woman younger than 30 years from Chalata and a man from Chawama said that groundnuts cause women to have extra vaginal discharge. During pregnancy, women said they avoided consuming certain foods because of the food’s effects on their bodies and on their fetuses. *Kapenta* and *kasepa* (small fish), oily food, and cold food all caused nausea, vomiting, and heartburn. Women based their aversions to certain foods on both biomedical and local knowledge of how the foods might negatively impact the development of the fetus. Both female and male respondents described alcohol, tobacco, and soil as substances that interfered with healthy child development. Specifically, they said alcohol affected children’s brains and smoking harmed children’s lungs and brains. The respondents did not describe any specific physical effects of eating soil. Women also mentioned:

- Chilies (considered to cause red eyes or burnt skin).
- Lemons (considered to lead to underweight babies).
- Sugar cane (considered to cause “lines in the stomach” of a child and dry skin).
- Food cooked with soda, which is not vitamin-rich.
- Fried maize (considered to cause delayed physical development in female children).
- Bubble-fish (may cause miscarriage or a baby “born with a big head”).
- Pork (can affect a child mentally).

Women also avoided chicken and eggs. Explained one respondent: “It is said that if a woman eats eggs, her children will be born without hair. It is also said that if a woman eats certain parts of the chicken, such as the back part, she will not be able to have children.” Women’s aversion to the back and gizzard of a chicken is likely due in part to local tradition, which dictates reserving these parts of the chicken for special consumption by men. However, it was not clear whether the tradition was regularly practiced. One female respondent older than 30 years from Chalata said:

There was a long time ago when women could only eat a few parts of a chicken like the feet. This does not happen nowadays. Things are changing now because women are being taught about their rights, and our husbands are also changing because now they see how women were being taken advantage of.

An older male respondent from Chalata said, “A long time ago there were traditional restrictions on what food a woman could eat, but these no longer apply.”

When women are breastfeeding, they should avoid alcohol, said both female and male respondents. They said alcohol hurts a mother's milk production and her ability to care for her children, increases her metabolism, and hurts child development. One female younger than 30 years from Chalata said that alcohol does not necessarily affect a child's health but does affect the mother's caregiving abilities. "I think drinking is discouraged, because if you get drunk how will look after your child?" she said.

Other foods that respondents cited as interfering with milk production include lemons, chilies, sweet potato leaves, okra, and foods with soda. Respondents said mutton, pork, and fish cause a rash in both the mother and the child.

Nutritional practices and advice for HIV-positive women

Responses about the nutritional needs of HIV-positive women during pregnancy were mixed. The majority of respondents said that HIV-positive women need to eat more frequently than non-infected women and need to eat a wider range of foods. They also emphasized a balanced diet that provides vitamins and strengthens the immune system. HIV-positive women should avoid meat, alcohol, tobacco, and oily foods, they said. One young male respondent from Chalata said that an HIV-positive woman requires a separate diet because she "now has two issues to deal with, the pregnancy and being HIV positive." However, other respondents did not believe that HIV-positive women must eat differently. For example, another male respondent from Chalata stated that "a pregnant woman has to eat well whether she is HIV positive or not."

Another young male respondent from Chalata stated that the ANC clinic usually gives nutritional advice specifically for HIV-positive women. Some respondents were also aware of PMTCT and breastfeeding practices tailored to HIV-positive women. A man from Chawama said, "There is supposed to be a difference when it comes to breastfeeding. Women who are HIV positive have to stop breastfeeding at six months while a woman who is not HIV positive can stop breastfeeding much later."

Economic issues and income-generating activities for women

Respondents commonly said households lack adequate financial resources, which affects women's abilities to follow healthy nutritional practices. For the most part, respondents attributed financial difficulties to the unemployment or under-employment of men, a lack of available jobs, and a burdened economic system. "A lot of husbands are not able to help because of the fact that money is hard to come by. Sometimes they try farming but things don't work out because of the expense of fertilizer," said a woman older than 30 years from Chalata. One female older than 30 years from Chikobo said, "If the government can help with fertilizer and seeds for farming families, it would really make a big difference." One woman younger than 30 years from Chalata said that her family had limited financial resources due to her husband's drinking habits.

Sources of food. Despite their knowledge about different foods and their effects, respondents said their decisions about nutritional intake tended to be based on economics, though some men did mention purchasing foods for their pregnant wives to satisfy their cravings. In general, men give women money to purchase food, and women decide which foods to purchase. A woman older than 30 years from Chalata said:

In most cases it is the women who decide what to buy because they are the ones who know what is needed in the house. When our husbands give us the money we then make the budget for what is needed in the house.

However, men also occasionally decide what to buy, particularly in families that cannot afford to buy several foods at once. A young man from Chalata said:

In some homes the man does not give the wife money for food; he is the one who makes all the decisions because he keeps all the money. Instead of giving her K20,000 to go and buy food for three days or so, he just gives her maybe K2,000 per day and tells her to buy some kapenta (small fish) today; the next day he will give her a K5000 and tell to buy some rape, just like that. So it's different for everyone especially when you look at how people earn their money. Some of us cannot manage to give a woman a lot of money at once.

One male respondent from Chawama said that he and his wife jointly budget for and purchase food. Several respondents purchase the majority of their foods because they do not have land for farming. However, most respondents mentioned growing many of their foods, including a range of vegetables such as squash, sweet potatoes, tomatoes, cabbage, eggplants, okra, and beans, as well as maize and fruits such as watermelon. They also mentioned raising chickens and getting eggs at home. Respondents said they regularly purchase meat, fish, eggs, vegetables, beans, mealie meal (maize), groundnuts, cooking oil, salt, and sugar. Meat is especially difficult to purchase when financial resources are constrained, as a man from Chalata noted:

Foods like chicken and meat are good for pregnant women but the only problem is that a lot of us cannot afford to buy these things. Even when they tell them at the clinic, the nurses themselves know that these women cannot afford to buy all these things.

One male respondent from Chikobo addressed this problem by eating cheaper foods that have a high nutrient content similar to that of meats, such as beans, groundnuts, vegetables, and kapenta.

Respondents considered a lack of money for adequate foods particularly problematic during pregnancy and breastfeeding when women need a higher level and quality of nutritional intake. Both female and male respondents said their priority is to ensure that money goes to taking care of their children and families. A man from Chawama said, "Even if you are home and food is cooked, a man doesn't eat as much as his wife and the children because he would rather sacrifice so that they get enough to eat." A man from Chikobo said, "It is now the responsibility of the man to provide because he is now looking after two people, so he needs to make sure that the wife eats enough so that the child also eats enough through the mother." One female respondent younger than 30 years from Chikobo said:

No, I didn't manage to eat all the things that I wanted to eat due to lack of money. After having a child, money is very tight due to all the expenses that are involved. You want to buy the latest clothes for your baby so the money finishes.

A female respondent older than 30 years from Chikobo said:

Sometimes when there is very little food in the area, women just look around for food that they can at least give to the children while they themselves just go hungry. The most important thing is to make sure the children are fed so that they don't go to the neighbor's house crying for food.

Jobs for women. Although respondents consider men the primary income earners, both female and male respondents described jobs for women as a way to increase household earnings. Women said potential income-generating activities for themselves include small business operation such as chicken rearing, sewing/tailoring, and gardening; planting and selling maize; working at a salon; and selling bread and other food items at the market. The majority of women mentioned starting small businesses as a strategy for earning income. They also consider skill-building important: "Teaching these women new skills like knitting or sewing can also help," said a woman younger than 30 years from Chikobo. "This can help them to earn some money that they can use to buy the things they need so that they are able to support their families."

Men said women can generate income by selling vegetables and other food items at the market, starting small businesses such as backyard gardens, or working in cooperatives. Respondents noted that backyard gardens could bring in both extra income and more nutritious foods. One young man from Chalata said, "They should have gardens where they can grow food and also they can have a business so that they can make some money for food." A man from Chikobo said:

Others completely fail to get the food that they need, so it would help if they could intensify their farming efforts so that at least they have a lot of vegetables to eat. They should grow a lot of groundnuts so that they cook a lot of food with groundnuts.

Respondents said barriers to women working include the difficulty of generating initial capital for microfinance activities and small businesses and women's inability to work in their later months of pregnancy. Women suggested that the government offer assistance by providing women with ideas for income-generating activities, engaging them in skill-building sessions, and helping them form cooperative clubs.

Social support

Material/financial support. The majority of women said their husbands are their primary source of social and financial support for purchasing food and other household items. However, one woman younger than 30 years from Chalata offered a different perspective:

It depends. Some men are supportive while others are not. Some men might have money but they can never give it to the wife so that she can go and buy food. But others will give the wife the money so that she buys food for the family.

Some men said one of their primary roles is to financially support their families, particularly in terms of purchasing food. One man older than 30 years from Bwacha said that it was the

woman's responsibility to choose the "right" foods: "Leave enough money for them to buy the right food." An older man from Chalata also commented that some men receive financial support and social support from their peers: "But I have to say that as men we do try to make sure that we get the food that our wives need, even if it means asking our friends for assistance."

Some women said that men help with household chores, and several men said they have helped their wives with chores and food purchasing, particularly during their wives' pregnancies or right after delivery. "After you have the baby, husbands usually become more supportive and start buying all those foods that you craved while you were pregnant or even before you were pregnant. They get excited when there is a baby," said a woman older than 30 from Chalata.

Emotional support. More men than women said they provide their wives with social and emotional support. Several men said it is important to encourage their wives to eat more and to choose healthy foods:

When they feel like eating, we usually do our best to encourage them to eat as much as they can. When they have an appetite you also have to be there to eat with them, even if you are full, so that they are encouraged eat. (Male, Chikobo)

You also try and educate them on the goodness of the food that they are refusing to eat. (Male, Chikobo)

Men also said they provide general encouragement and support for their wives, express concern over their pregnant wives' well-being, and work to decrease stress in their lives:

We usually try to help because we know we are to blame. We usually try our best to meet all their needs while they are pregnant. We will try to get them the food that they want and also we try to make their lives stress-free. (Male, Chikobo)

Men older than 30 years in Bwacha said it is important to provide emotional support, love, and affection for women.

Women said they also get social support from their neighbors, families, parents, in-laws, and church communities. Only one female respondent younger than 30 years from Bwacha cited the importance of being involved in peer groups—in this case, a group for breastfeeding women at the local clinic. Some women perceived a lower level of support from their social networks than did others. Both female and male respondents noted that women often have nobody to help them around the house, which is especially difficult for pregnant women. One female respondent younger than 30 years from Bwacha said, "Pregnant women that are staying with in-laws also need help since they are taken for granted and have to do all the work as if they are the hired help."

Health facility use

All respondents discussed the types of health and nutrition services pregnant women receive at ANC clinics. Their responses are detailed in the tables below:

Table 3. General health services received at ANC clinics

	Blood-pressure checks	Weighing/physical exams	Fetal health	Anti-malarial	Deworming	Immunizations	VCT/HIV testing and education	Education (including pregnancy, delivery, child care, self-care)
Bwacha	X	X		X	X	X	X	X
Chalata	X	X		X			X	X
Chawama	X	X	X	X	X		X	X
Chelstone	X			X				X
Chikobo	X	X	X	X	X	X	X	X
Katete-Luangwa	X	X	X	X			X	X
Lusaka-Matero			X	X	X		X	X
Siavonga Mtendere	X	X	X					

Table 4. Nutritional health services received at ANC clinics

	Iron supplement	Folic acid supplement	Vitamin A supplement	Nutrition education	Cooking demonstrations	Other
Bwacha	X	X		X		
Chalata	X	X		X		
Chawama	X	X		X	X	Vitamins
Chelstone	X					Told to avoid alcohol and tobacco
Chikobo		X	X	X		Vitamins
Katete-Luangwa	X		X	X		
Lusaka-Matero	X	X	X	X		
Siavonga Mtendere				X		Folic acid tablets post-delivery

The only mention of post-delivery services was the provision of “yellow” tablets and Panadol (pain reliever and fever reducer) in Siavonga Mtendere, as well as postpartum vitamin A in Chikobo, Katete-Luangwa, and Lusaka-Matero. Most women also mentioned receiving some education and preparatory information about delivery, breastfeeding, and child care.

Role of men in health facility use. Men recognize that they can provide social support to their wives by accompanying them on visits at the ANCs or “under-five” clinics, but they typically do not go inside. Men described feeling proud to accompany their wives to the ANCs, but they do not feel comfortable entering the clinic or participating in clinic visits:

We feel very proud when we attend ANC with our wives. It shows that we are parents.
(Male, Chikobo)

[I] am proud to go to ANC with my wife, but when we get there, there are just women there so I get discouraged and I feel shy. (Male, Chikobo)

Men also said they accompany their wives to the ANCs because the women are too tired to go on their own.

Men across all groups said they do not come inside the clinic with their wives for the following reasons:

- Fear of blood tests.
- Fear for the health of their wives.

- Shyness.
- Perceived social injunctions against accompanying women.
- Only women are inside the clinic.
- Women have to undress in the clinic.
- There is nothing for men to do.
- Men are not allowed.

“No, it’s not even allowed,” said a man from Chawama. “They just allow women. We just come when the baby is born.” A male respondent from Chelstone said that men are not wanted at clinic visits. On the other hand, a male respondent from Chalata stated that many ANCs encourage women to come with their husbands and at times even require that women bring their husbands. When interviewers asked men from Chikobo how to encourage men to accompany women to ANC visits, respondents suggested sensitizing men to ANC visits and introducing a father’s day at the ANCs.

Respondents’ answers indicate men are receiving different messages about whether to join their wives at clinic visits. While men provided a number of reasons for why they did not join their wives, they also seemed to be interested in ANC activities. Female respondents were not explicitly asked about their attitudes toward men joining them at ANC visits.

Challenges facing women

Respondents reiterated many of the challenges that women face are due to a lack of financial resources within the household. Respondents mentioned not having enough money to buy “good” foods or to provide sufficient food for all family members. Women said that it often is difficult to find jobs or other income-generating activities. Some challenges are relational, including a lack of social support from husbands and peers, a lack of help around the house from husbands, and fear of HIV infection. A young male respondent from Chalata said:

Another challenge that they face is HIV. While women may be getting tested, the same cannot be said about the men. So not knowing the man’s status can be a big challenge for the woman.

Similarly, a female respondent younger than 30 years from Chikobo noted that women’s jobs may put them at risk of HIV:

I don’t think working in bars is a good idea, particularly for young women, because there are a lot of men in bars who might ask you out and you might end up accepting someone who is HIV positive. There is no way a man can just give you money and not want anything in return, that’s a lie. So it’s not a good place to work.

Other challenges women face are structural in nature, such as accessing clean water supplies, affording charcoal and electricity, finding transportation to health clinics, and receiving care at understaffed clinics.

Key findings and recommendations

Main findings from in-depth interviews and FGDs

Existing health and nutrition activities largely focus on health outcomes of children rather than pregnant and lactating women. Community members are aware of and value the health and nutrition education provided by CHVs and clinicians. Most community members received nutrition education from ANCs. Community members understand the link between nutritional practices and the healthy development of children. However, the behaviors CHVs observe do not always match community members' knowledge. Community members provided examples of both biomedical and ethnomedical reasoning for why certain foods are beneficial or harmful during pregnancy and breastfeeding. Respondents primarily learn about malnutrition prevention and nutrition education through health workers and peers who identify locally available nutritious foods and through watching demonstrations on how to prepare these foods.

Communities and individuals face several barriers to obtaining and incorporating more nutritious foods into the diets of pregnant and lactating women, such as lack of finances, subsistence patterns, seasonal availability, the role of men, and competing priorities. Clinicians, CHVs, and community members all noted the importance of economic constraints in nutritional practices. Community members commonly said that a lack of adequate financial resources is a barrier to healthy nutritional behaviors, and women said they primarily do not eat healthy foods during pregnancy or breastfeeding because they do not have enough money to purchase nutrient-rich foods. Decisions about food purchasing and preparation are based largely on economic considerations. In most cases, community members said that men supply money to purchase foods, while women select and purchase specific foods. Financial problems are usually due to the unemployment or under-employment of men. Some families have found strategies to overcome this barrier by seeking out cheap but nutrient-rich food. Health providers see family planning as a key area for improvement that would enable families to have positive nutrition behaviors with limited finances.

The interviews and focus groups with providers and COLs generated a smaller discussion than researchers expected on the role of HIV/AIDS in health and nutrition issues. Community members expressed contradictory views on the specific dietary needs of HIV-positive women. More research is needed to determine the extent of community members' knowledge on health needs of HIV-positive women.

Regarding nutritional supplements, women said they receive iron, folic acid, and vitamin A at ANC clinics. However, vitamin A was not mentioned as often as the other supplements, and it is not clear whether this reflects actual supplementation practices by clinics.

Clinicians and CHVs most often conceived of community and social support for nutrition and health in terms of organized women's groups such as nutrition and breastfeeding groups. Most of the clinicians and CHVs suggested that these groups be strengthened to aid providers in nutrition education, empower women, and allow for sustainable positive behaviors for pregnant and lactating women in the community. CHVs and clinicians suggested that nutrition education refresher courses, visual aids, information booklets, and some form of incentives for volunteers could greatly improve the sustainability of these groups. Community women mostly referred to ANC clinics and clinic-based women's groups as sources of nutritional education, rather than as

sources of social support. Women described social support in relational terms, referring to neighbors, family members and, most often, husbands. Community women perceive their husbands as their primary source of social and material support. Community men also perceive their role as generating household income and assisting with food purchasing and household chores. In addition, men mentioned providing emotional support. Men accompany their wives to ANC clinic visits but do not typically participate in sessions because of perceived social norms, although there was some interest in doing so.

Clinicians and CHVs saw agricultural practices and income-generating activities as major potential solutions for preventing malnutrition, organizing and empowering women, and ensuring that nutrition knowledge becomes practiced behavior. Respondents noted the need to involve all community members, especially men, in community sensitization campaigns focused on malnutrition prevention in pregnant and lactating women and to increase communication between the communities and external aid organizations, clinics and hospitals, and government bodies. Community members also expressed interest in having women participate in income-generating activities. Most women mentioned starting small businesses or joining women's cooperatives as ways to earn money. A major barrier to women's work is difficulty in generating initial capital for small businesses. Women suggested that the government provide ideas for income-generating activities, engage them in skill-building sessions, and help them form cooperative clubs.

Program recommendations

Based on the findings of this study, we offer the following recommendations to improve maternal nutrition in Zambia:

- Promote clinic-based women's nutrition and breastfeeding groups as sources of social support for community women.
- Disseminate ideas for income-generating activities and conduct skill-building activities through clinic-based women's groups.
- Promote and support backyard gardens as an income-generating activity for women and a healthy nutritional practice.
- Conduct separate group activities for men at ANC clinics or hold regular "fathers' sessions" for men to introduce them to and engage them in clinic activities, as well as to recognize their own nutritional needs.
- Use COLs to sensitize men about healthy nutritional practices and the nutritional needs of pregnant and lactating women.
- Provide support and incentives for the volunteer staff of clinic-based women's groups.
- Provide nutrition education refresher courses, visual aids, and information booklets for clinicians and CHVs and offer incentives such as bicycles.
- Increase communication between community leaders and external aid organizations for the direct provision of micronutrient-rich foods to financially and nutritionally vulnerable women.

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