MCSP Nutrition Brief:
Key country experiences in addressing maternal nutrition through nutrition-health integrated programming

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Background

Adequate maternal nutrition during the "first 1,000 days" window is especially critical from conception through the first 6 months of life to improve nutritional status of both the woman and infant and reduce the risk of adverse birth outcomes, such as low birthweight and pre-term birth (Black et al. 2008; Haddad et al. 2015; Shrimpton 2012; Black et al. 2013; Barker et al. 2010; Ramakrishnan et al. 2012; Özaltin et al. 2010; USAID 2015). Data from 62 studies in low- and middle-income countries (LMICs) in Africa, Asia, and Latin America and the Caribbean found inadequate micronutrient intakes and very little dietary diversity among pregnant and lactating women (Lee et al. 2013). Unfortunately, many programs targeting the first 1,000 days have only focused implementation and evaluation efforts on infant and child health benefits and outcomes of nutrition interventions, not maternal dietary consumption during pregnancy and lactation (Lee et al. 2013; Victora et al. 2012).

According to the recent World Health Organization (WHO) guidelines, counseling about healthy eating and keeping physically active during pregnancy is recommended for pregnant women to stay healthy and to prevent excessive weight gain during pregnancy (WHO, 2016).

Improving maternal nutrition can reduce the risk of poor pregnancy outcomes, such as fetal growth restriction and small-for-gestational age births and can contribute to reducing a child's chances of developing obesity (Christian & Stewart, 2010). Adequate maternal nutrition and weight gain during pregnancy are the cornerstones of health for women and their children, affecting pregnancy outcomes as well as the growth and development of children.

Targeted approaches to address maternal nutrition and appropriate weight gain during pregnancy are essential to improve maternal, infant and child nutritional status as well as associated health and nutrition outcomes (MCSP, 2017; Kavle & Landry, 2017). The WHO's 2016 antenatal care (ANC) recommendations (WHO, 2016; MCSP, 2018a) provide guidance on how programs can plan and implement nutrition and anemia interventions for pregnant women and emphasize:

- A healthy pregnancy requires a diet that includes an appropriate intake of energy, protein, vitamins, and minerals to meet maternal and fetal needs. Yet for many pregnant women, dietary intake of vegetables, meat, dairy products, and fruit is often insufficient to meet these needs, particularly in LMICs, where multiple nutritional deficiencies often co-exist.

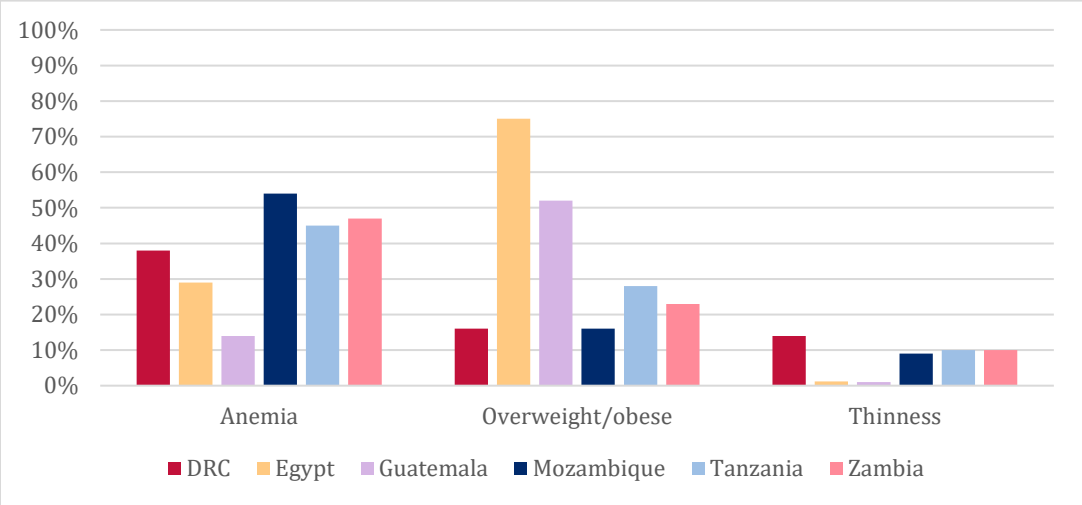
- Obesity and overweight are also associated with poor health, pregnancy, and lactation outcomes. Women who are overweight or obese are less likely to initiate breastfeeding or exclusively breastfeed and more likely to breastfeed for shorter duration (Soltani 2016; Garcia et al 2016; Anstey & Jevitt 2011; Babendure et al. 2015; Amir & Donath 2017). Many women in a variety of settings gain excessive weight during pregnancy. Therefore, pregnancy weight gain goals should be based on a woman's body mass index (BMI) at the start of her pregnancy.

Country Experience

How did MCSP work with countries to address maternal nutrition within health programming?

MCSP addressed maternal nutrition in six low- and middle-income countries, including the Democratic Republic of Congo (DRC), Egypt, Mozambique, Tanzania, Guatemala, and Zambia. Figure 1 depicts the prevalence of anemia, overweight/obesity, and thinness that commonly affect women of reproductive age, women of reproductive age (WRA), which range widely among these countries.

Figure 1. Key maternal nutrition indicators by country, Demographic and Health Survey data (2011-2015)



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Formative assessments and research

In the DRC, Egypt, Kenya Mozambique, and Tanzania, counseling and other social and behavior change communication interventions with culturally-resonant messages were developed, based on formative research/assessments conducted with women and other key influencers, including elder women and fathers. MCSP has conducted work to ensure the "what and why" of foods that provide the necessary energy, protein, micronutrients, and fatty acids, including fortified staple foods and condiments (Kavle & Landry, 2017) are communicated within the context of cultural taboos and perceptions, in order to provide feasible solutions to increase dietary intake (USAID, 2015). The formative assessments/research in Egypt, and Mozambique used the Trials of Improved Practices (TIPs) methodology. Consisting of three household visits to the mother, TIPs is a consultative methodology used to determine existing infant and young child feeding (IYCF) practices in the first visit and negotiate with the mother new practices to try in the second visit. The mother is followed up with one week later (the third visit) to determine if they were able to practice the counseled behaviors, what they thought of them, and if they would continue to practice them (Manoff Group, 2015). The methodology identifies barriers, solutions to the barriers, and facilitating factors to practice optimal IYCF, which emanate from the mothers trying out the practices in their households – their real context.

MCSP also conducted formative implementation science research in the DRC and Tanzania. In the DRC, MCSP examined cultural beliefs and perceptions of IYCF, child illness, and care-seeking behavior for sick children as well as perspectives of health providers who provide counseling on nutrition and integrated community case management (iCCM) to identify gaps and opportunities to strengthen nutrition counseling at the health facility and community level. In Tanzania, formative research was conducted to inform the development of a revitalized approach for promoting postpartum family planning (PPFP), optimal IYCF practices, lactational amenorrhea method (LAM) (among other PPFP options), and timely transition from LAM to another modern contraceptive method.

Table 1. Key findings of MCSP studies and formative assessments to inform on maternal nutrition programming, by MCSP country

Methodology	Country	Key Findings	How findings were used to strengthen counseling and behavior change
Formative assessment/ research using TIPs	Egypt (Kavle et al., 2014)	• Women stated that a pregnant woman's diet should contain "*good*" and "*beneficial*" foods such as meat, fish, lentils, chicken, eggs, and milk, as well as various fruits and vegetables • The actual consumption of *"beneficial"* foods during pregnancy is sometimes limited by personal preferences and affordability of foods • Junk food and caffeinated beverages as well as salty, pickled, and spicy foods are considered "*bad*" during pregnancy • Women indicated that they generally consume more foods during lactation than they usually do, whether non-pregnant or during pregnancy . The quantity of foods consumed was perceived to be associated with	• A counseling guide was developed for health providers, which provided guidance on healthy eating during pregnancy and lactation, including IFA supplements and reasons for taking them

		the amount of breastmilk produced ● Women routinely receive iron and folic acid (IFA) supplementation during ANC; however, some mothers said they do not know why IFA is important or the reasons for taking IFA	
	Mozambique (MCSP, 2017a)	● *Xima* (from cassava, sorghum or maize flour), rice, leafy greens (cassava, pumpkin, spinach), carrots, beans (*bóere*), *nicusse* fish, crab, eggs, stews made with peanut or coconut, pineapple, banana, melon and papaya were consumed during pregnancy ● Some respondents reported knowing what to eat, yet not accessing these foods, due to a lack of finances ● Most pregnant women went to ANC to receive iron and folic acid supplements and deworming pills. However, the visits were often not timely or frequent, and problems with taking the pills were commonly mentioned ● Most women could not explain the importance of taking iron-folic acid supplements and relayed they hadn't been told about their benefits by the nurses	● A counseling guide was developed for health providers to address maternal nutrition, maternal anemia (IFA, deworming, and anti-malarials), and perceptions of insufficient breast milk ● National anemia prevention and treatment materials were developed alongside the Ministry of Health, which were pre-tested across the country
Implementation Science, Formative research Study	DRC (Kavle et al., 2018)	● Mothers discussed problems producing enough breast milk to feed their infants, due to inadequate maternal nutrition and long periods of separation of mother and baby ● *Sombé* (a dish mainly composed of cooked cassava leaves with oil) was often cited as a good food for mothers, with a beneficial effect on their breast milk production ● Foods that were mentioned as taboo for breastfeeding mothers included game meat (snake, monkey, crocodile), sugar cane, pineapple, mango, and sweet potato leaves. Mothers conveyed they would not consume these foods given the perception of these foods would deteriorate the quality of the	● Revised national IYCF counseling cards in collaboration with the Ministry of Health, based on study findings, which included key messages on maternal nutrition. Health providers were trained on counseling mothers using these counseling cards during community visits and at health facilities

		breast milk and provoke diarrhea in the child	
	Tanzania (MCSP, 2017b)	• The perception of not having sufficient breast milk was common among many mothers, and a consequence of the quality and quantity of food consumed by mothers during the postpartum period • Mothers seemed to favor foods that were perceived to increase the quality and quantity of breast milk including porridge, ugali, tea, and rice. • Vegetables and fruits were rarely mentioned as beneficial.	• Developed a job aid to counsel women on exclusive breastfeeding and LAM, LAM song, and key counseling messages on improving maternal nutrition during breastfeeding and addressing insufficient breast milk, which were rolled out in MCSP areas with the Ministry of Health

E-Learning Courses

E-learning, is learning that takes place through electronic technology or media (WHO, 2018). MCSP rolled out e-learning courses in Guatemala and Zambia, which included key counseling content to build providers' knowledge and skills on maternal nutrition counseling.

Guatemala

In 2012, Guatemala's *Diplomado* e-learning course was developed by the FANTAIII project to strengthen the knowledge and skills of health providers to improve the provision of services and counseling on nutrition at the primary health care level (i.e., in health posts) (Palmieri et al., 2017). MCSP supported the MOH in conducting trainings to auxiliary nurses in the Western Highlands region through the Diplomado to build their capacity in maternal, infant, and young child nutrition knowledge and competencies in counseling. The messages for health providers in the *Diplomado* around maternal nutrition include:

- Promote the consumption of a variety of natural foods each day that aren't processed, such as fruits, vegetables, seeds, meats, and foods that have not been processed.
- Encourage pregnant women to breastfeed within one hour of birth and exclusively breastfeed for six months
- Motivate the mother to reduce her consumption of processed foods, such as cup soups, candy, sweets, canned food, and all foods that contain an excessive amount of sodium, fat, or sugar.
- Explain why she should avoid consuming foods like: fried chicken, French fries, tacos, and other foods that contain high amounts of saturated fats (meat fat, butter, margarine, cream, and oil that has been used in other preparations).

Zambia

In Zambia, MCSP is working closely with the Ministry of Health to develop an e-learning course for improving the knowledge and service provision of health providers through in-service trainings. This course includes a module on maternal, infant, and young child nutrition (MIYCN), which utilizes the following key messages and topics on maternal nutrition:

- Breastfeed within one hour of birth
- Exclusively breastfeed for six months and continue breastfeeding to the child's second birthday
- Breastfeeding positioning and attachment

- Attend ANC as soon as they know they are pregnant
- Eat a variety of foods (vegetables, fruits, meats, milk, and milk products) and an extra meal every day when pregnant
- Take IFA supplements to prevent anemia
- Use fortified foods, including iodized salt
- Exercise lightly during pregnancy

Ghana

MCSP supported the Ghana MOH in the development of content for a maternal nutrition module for an eLearning course to be integrated into curriculum at midwifery schools in Ghana. This course aims to provide pre-service trainings to build future midwives' capacity in maternal nutrition and uses the following key messages and topics:

- Consume of a variety of food groups and limit the consumption of processed or "junk foods"
- For undernourished women, eat an extra meal per day when pregnant and lactating
- Take IFA supplements around pregnancy to prevent anemia
- How to diagnose and treat anemia

Program Implications

Although most programs are targeted at infants and young children, a shift is needed to also address the health and nutrition of women pre-conception and during pregnancy and lactation in the design of future programs (Victora et al., 2012). Targeted approaches to address maternal nutrition and appropriate weight gain during pregnancy are critical to improve maternal and infant nutritional status and health outcomes (MCSP, 2017c; Kavle & Landry, 2017). In addition, improving diet pre-conception for adolescent girls is a crucial component of achieving optimal nutritional status during pregnancy and lactation through the identification and use of platforms to reach adolescents (i.e., schools, teen clubs) (Duffy et al., 2015).

Key interventions to improve maternal nutrition

- **National level:**
  - Include guidelines on maternal diet and weight gain during pregnancy in key policy and strategic documents, including maternal health documents.
  - Include maternal diet and weight gain during pregnancy into pre-service and in-service training and curricula.
  - Engage with other sectors, including Ministries of Youth, Gender, Education, and Agriculture (USAID, 2015; Duffy et al., 2015).
- **Health facility level:**
  - Routine health contacts, including during ANC and PNC, are missed opportunities to provide information and counseling on maternal diet and weight gain during pregnancy. Although some countries include information, education, and communication on maternal diet during ANC and/or PNC in guidance or policy documents, materials at the facility level to support counseling are often lacking.
  - Development of culturally-tailored, simple counseling materials and/or messages delivered during routine visits is critical.

- Train health providers, such as nurses, local nutritionists, and midwives, in counseling on what foods to consume and why, based on necessary energy, protein, micronutrients, and fatty acids, including fortified staple foods and condiments according to local cultural context (USAID, 2015).
- Conduct formative assessments to address beliefs that health providers may hold regarding maternal dietary intake and weight gain during pregnancy through trainings and on-site mentoring to provide local, culturally-appropriate solutions to improve quality of counseling and service delivery.
- Ensure the following counseling topics are incorporated during ANC:
  - Anemia and the need to consume iron rich foods
  - Why, when, how many, and how long to take IFA
  - IFA side effects and counsel regarding how to manage side effects, if they occur and when to return for follow-up
  - Food taboos and cultural beliefs
  - Individual barriers that may make it difficult for women to maintain a healthy diet during pregnancy.
  - Healthy weight gain in pregnancy based at the start of pregnancy
  - Exclusive breastfeeding in the first six months of life and maternal nutrition required for additional caloric expenditure

- **Community level:**
  - Engage and empower grandmothers, fathers, and other key influencers (i.e., elder women, community leaders) to provide correct information on maternal diet and weight gain during pregnancy through cooking demonstrations as well as encourage early and frequent ANC visits (Gryboski, 1996; Wiley, 2002).
  - Use mother-to-mother support groups, care groups, or community support groups as potential platforms to counsel on what foods to consume and why and to discuss challenges faced by women and potential solutions.
  - Address maternal nutrition within the context of infant and young child feeding counseling provided at the community level through platforms such as the Baby-Friendly Initiative (Kenya Ministry of Health et al., 2016).
- **Individual level:**
  - Gain an understanding of cultural beliefs and barriers that influence food choice and perceptions about weight gain during pregnancy through formative research or assessments.
  - Use formative findings to design and implement culturally-appropriate approaches and messages to improve maternal diet and appropriate weight gain during pregnancy as well as to prevent excessive weight gain during pregnancy.
  - Counsel on healthy eating and keeping physically active during pregnancy to promote a healthy pregnancy and to prevent excessive weight gain during pregnancy in contexts where overweight and obesity are emerging issues (WHO, 2016).
  - Counsel on weight gain during pregnancy, according to pre-pregnancy BMI (WHO, 2016).
- **Data Gaps:**
  - More information is needed on the impact of programs that include maternal nutrition interventions.

- Indicators for maternal nutritional status, women's dietary diversity, monitoring weight gain during pregnancy, and birthweight should be included in routine data collection and monitoring (FANTA, 2016; WHO, 2016).

MCSP has rolled out innovative approaches to address maternal nutrition through integrated nutrition-health programming in several LMICs. It is essential to strengthen maternal nutrition programming during the "first 1,000 days" and pre-conception, to improve health and nutrition outcomes of women and children globally.

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