



■ Landscape Analysis Brief

INTRODUCTION OF BALANCED ENERGY PROTEIN (BEP) SUPPLEMENTATION THROUGH ROUTINE ANTENATAL CARE

Considerations for Programs

INTRODUCTION

Pregnancy requires increased energy, protein, and micronutrient intake to support optimal development and growth of the fetus. Yet, in nutritionally vulnerable populations, underweight women (body mass index [BMI] < 18.5 kg/m²) are at risk for poor birth outcomes, such as delivering preterm, low birthweight, and/or small for gestational age (SGA) infants.^{1,2}

Globally, countries hit hardest by the food and nutrition crises have shown a drastic 25% increase in pregnant and breastfeeding women suffering from acute malnutrition (5.5 to 6.9 million).³

While the World Health Organization (WHO) recommends balanced energy protein supplementation (BEP) during pregnancy, a type of nutritious supplementary food consisting of less than 25% of total kilocalories from protein, in settings where maternal underweight is ≥ 20%, strategies are needed to integrate BEP effectively in those settings.⁴ While many countries may have low national prevalence of underweight among pregnant women (< 20%), countries may consider adopting BEP recommendation as part of antenatal care (ANC) service delivery in specific areas experiencing high prevalence (> 20%) of women underweight.⁵ Scaling up BEP supplementation to underweight women is projected to ensure more young women complete secondary school and provide a cumulative increase in lifetime income of \$1.34 billion U.S. dollars.⁶

Objectives

- Provide in-depth understanding of enabling factors and challenges in the implementation of BEP supplementation through routine antenatal care
- Generate program recommendations to guide country programs

METHODOLOGY

We conducted a compilation of evidence and key informant interviews from country stakeholders (n = 7) and global stakeholders (n = 6) to inform this landscape analysis. Country selection was based on U.S. Agency for International Development (USAID)-funded programming on maternal health and/or inclusion of aspects of BEP implementation within development and/or emergency contexts in Colombia, Ethiopia, Ghana, Malawi,



Mozambique, and Nepal. To ensure a systems-lens, key informants included professionals working across various sectors (e.g., maternal health, nutrition) from governments; program/project implementers; multilateral organizations, including United Nations Children’s Fund (UNICEF), WHO, World Food Program (WFP); and the donor, USAID.

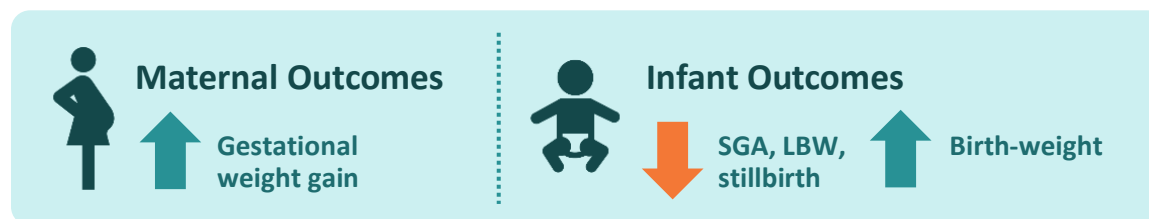
BACKGROUND

Box 1. WHO RECOMMENDATION A.1.3: Energy and protein dietary supplements

In undernourished populations, balanced energy and protein dietary supplementation is recommended for pregnant women to reduce the risk of stillbirths and small-for-gestational-age neonates (context-specific recommendation)

Undernourishment is usually defined by a low BMI [body-mass index] (i.e., being underweight). For adults, a 20–39% prevalence of underweight women is considered a high prevalence of underweight and 40% or higher is considered a very high prevalence. MUAC [mid-upper arm circumference] may also be useful to identify protein–energy malnutrition in individual pregnant women and to determine its prevalence in this population. WHO ANC guidelines, 2016

In 2016, the WHO set forth global guidance on ANC and recommended BEP supplementation in countries with a high prevalence ($\geq 20\%$) of underweight pregnant women to decrease the risk of stillbirth and SGA newborns (Box 1). A 2015 Cochrane review, which formed the basis of the WHO ANC 2016 guidelines, revealed that provision of BEP supplementation during pregnancy compared to a control group reduced risk of SGA and stillbirth, by 21% and 40%, respectively.⁷ A 2021 systematic review similarly revealed that maternal BEP supplementation reduced SGA by 29%, reduced low birth weight (LBW) by 40%, and reduced the rate of stillbirth by 61% in low- and middle-income countries.⁸ BEP supplementation has also been shown to improve gestational weight gain (GWG) (8.6 ± 2.3 kg).⁸



A 2017 Bill & Melinda Gates Foundation expert consultation discussed harmonization of BEP content, given the wide variation in composition (i.e., energy, protein, fat, salt, and sugar content) in the type and formulations of BEP products examined via research studies, which has contributed to the confusion on what precisely constitutes BEP.⁹ The consultation addressed convenience, meal replacement risk, packaging ease, safety, transport and micronutrient fortification.⁷

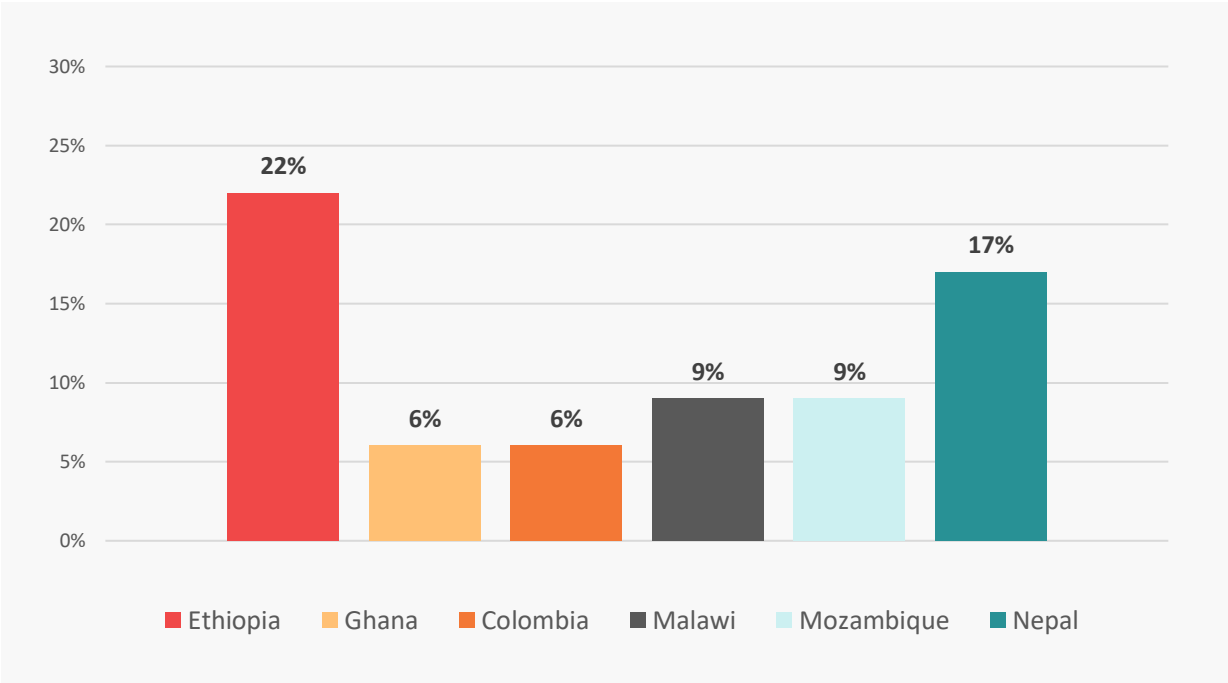
BEP supplementation: A food or supplement product designed to meet a minimum nutrition profile or composition: protein should account for less than 25% of the total energy content. It should provide 250–500 kilocalories of energy, 14–18 grams of protein, and 3–33 grams of fat.

FINDINGS

RATES OF UNDERWEIGHT AMONG WOMEN OF REPRODUCTIVE AGE ACROSS THE SIX COUNTRIES

Stakeholders from Ethiopia, Malawi, Mozambique, and Colombia discussed the importance of addressing maternal nutrition during pregnancy due to high rates of maternal underweight. Figure 1 shows the prevalence of underweight (defined as BMI less than 18.5 kg/m²) in women of reproductive age (15–49 years) according to available Demographic and Health Survey data, given lack of national data on underweight during pregnancy. Prevalence of underweight among women of reproductive age ranges from 6% to 22% in the six countries that participated in this landscape analysis. Ethiopia and Nepal have the highest prevalence of underweight among women of reproductive age at 22% and 17%, respectively. Malawi and Mozambique both report a similar prevalence of 9%, Ghana and Colombia follow with 6% prevalence of underweight. While some countries have a low prevalence of underweight among women of reproductive age at national level, these rates may vary at a subnational level. Additionally, adolescent women aged 15–19 are disproportionately affected by high rates of underweight, which may necessitate BEP provision as part of ANC in selected areas.

FIGURE 1. PREVALENCE OF UNDERWEIGHT (BMI < 18.5 KG/M²) AMONG WOMEN OF REPRODUCTIVE AGE (15–49 YRS) IN SELECTED COUNTRIES



BEP AWARENESS, INCLUSION, AND ALIGNMENT WITH POLICIES: A FOCUS ON COUNTRIES

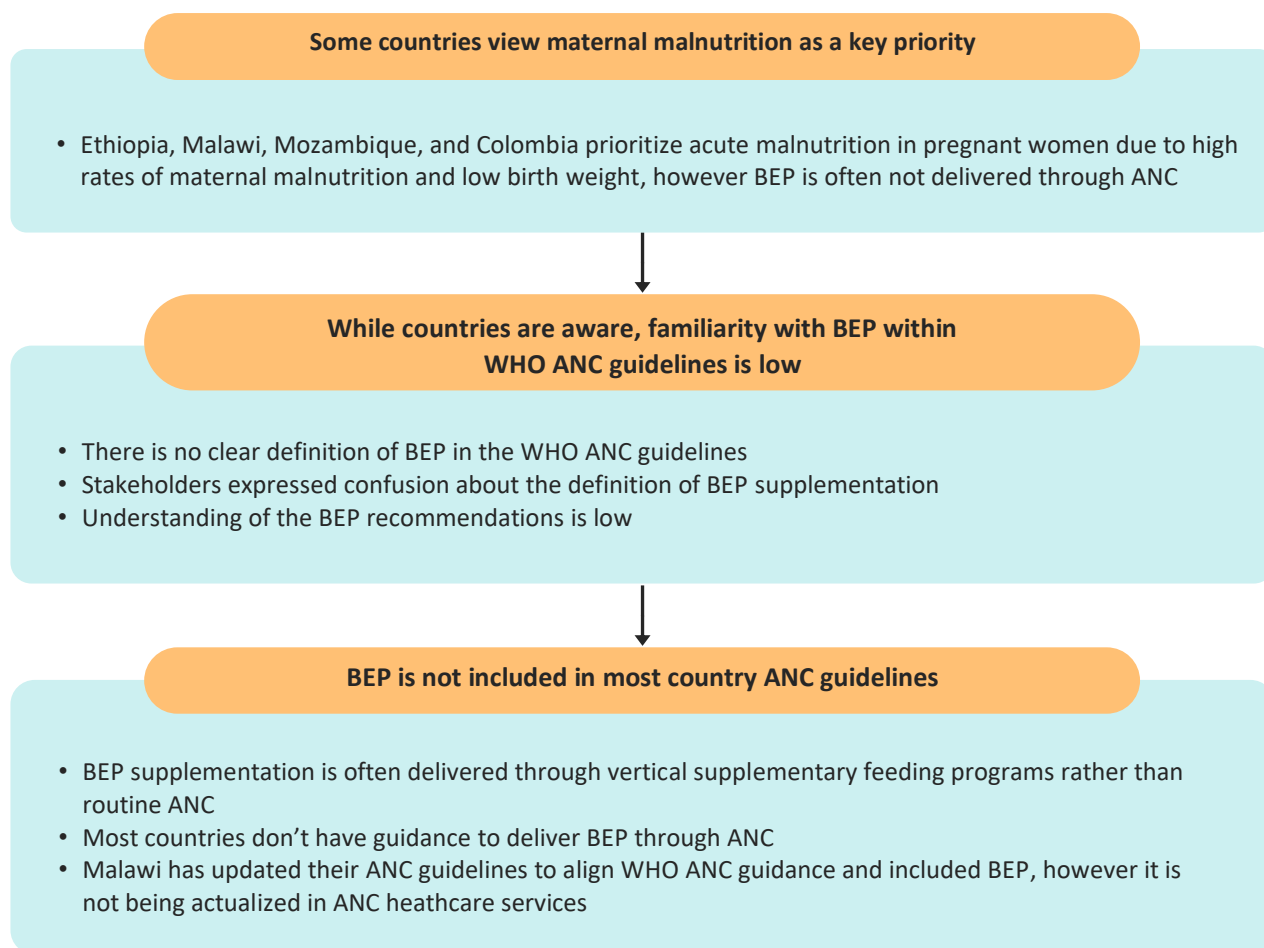
There is a notable awareness of BEP in the WHO ANC guidelines, yet integration into the policies and guidelines is low (Table 1). Delivery of BEP supplementation is largely done through vertical programs. While some countries are not yet implementing BEP supplementation as part of ANC service delivery, several countries have conducted pilots or implement BEP as part of emergency programming. A stakeholder from Colombia discussed the importance of addressing maternal underweight amid the migration crisis, and that BEP is currently provided via a parallel system for emergencies. Ethiopia and Malawi are notable for alignment with WHO ANC guidelines. Malawi integrated BEP into ANC guidelines “to align to the emerging issues with the WHO [2016 ANC guidelines] as part of the key interventions and the nutrition for pregnant women.” While BEP recommendations have not yet been operationalized in ANC services, Malawi is piloting BEP provision in the southern region of the country. Similarly, Ethiopia aligned their guidelines with WHO, trained health providers, and is providing supplementary food to underweight women through the integrated management of acute malnutrition (IMAM) program in emergency areas through WFP. Yet, the protein content in the supplementary food for pregnant women is 25.5% of the total energy, which does not qualify as BEP according to WHO recommendations. Mozambique is in the process of updating their ANC guidelines to align with WHO, while BEP is not explicitly mentioned, this provides an opportunity to include BEP supplementation. BEP is being implemented in the northern provinces of Mozambique as part of emergency programming under the nutrition rehabilitation program (PRN) with support from WFP. Figure 2 provides a summary of awareness and integration of BEP within ANC guidelines in the six selected countries.

TABLE 1: COUNTRY EXAMPLES OF BEP SUPPLEMENTATION AND ANC SERVICES

Country	Awareness of BEP in WHO ANC guidelines	Inclusion of BEP in the country ANC guidelines	Alignment of ANC guidelines with WHO	Integration of BEP into ANC package	Delivery of BEP through other programs (CMAM, IMAM)	Status of BEP implementation
Colombia	X				X (CMAM)	Not implemented via ANC. Implemented as part of emergency CMAM programming.
Ethiopia*	X		X		X (CMAM; select districts)	Not implemented as part of ANC. Implemented through the IMAM program as part of emergency programming.
Ghana	X					Not implemented in the country's health system.
Malawi	X	X	X		X (CMAM; select areas)	Not implemented as Ministry of Health recently updated ANC guidelines. Piloting BEP in the southern region.
Mozambique	X				X (PRN; select districts)	Not implemented as part of ANC. Implemented in the northern regions as part of emergency programming.
Nepal	X		X			Not implemented. Discussion on BEP implementation occurring at national level by partners.

* BEP is not explicitly mentioned in the guidelines, but some supplementary foods qualify as BEP. CMAM = community management of acute malnutrition

FIGURE 2: SUMMARY OF COUNTRY AWARENESS AND INTEGRATION OF BEP WITHIN ANC GUIDELINES



OPPORTUNITIES AND CHALLENGES TO PROGRAM BEP THROUGH ANC PLATFORM

Introduction of BEP into routine ANC presents a promising opportunity to address maternal underweight, yet this is coupled with challenges that merit further examination for BEP integration into ANC platforms. While opportunities exist for moving forward with program design and implementation of BEP, and some countries consider maternal underweight a priority, BEP is not provided through ANC platforms. General awareness of BEP recommendations within the WHO 2016 ANC guidelines are remarkably low among country stakeholders. The absence of BEP guidance in country ANC guidelines indicates its lack of prioritization, which is a significant weakness in the enabling environment. These opportunities and challenges are explored in greater detail below.

HEALTH SERVICE DELIVERY: SERVICE READINESS FOR BEP INTRODUCTION INTO ANC

ANC, AS A PLATFORM, HAS POTENTIAL FOR BEP PROVISION: Provision of BEP supplementation is typically provided through emergency and vertical programming, such as in Colombia, Ethiopia, Malawi, and Mozambique. The provision of BEP as part of the ANC package is largely absent from routine services—even in settings where maternal undernutrition is a country priority, as expressed by Malawi, Ethiopia, and Colombia country stakeholders. Some countries are considering aligning their ANC guidelines (Pakistan, India, Mozambique) or have already adapted guidelines, providing opportunities to provide BEP. A country expert

from Ethiopia relayed that “ANC is an important touch point in maternal health, making it a good platform to coordinate the provision of BEP supplementation for pregnant women.”

“The [MOH] plans to revise the ANC guidelines next month and I don’t know if the nutrition program has the opportunity to integrate [BEP]. This year we updated the postnatal guidelines with baby-friendly initiatives and maternal depression. We do not have technical personnel who are nutritionists in health clinics, but we have nurses, so it is an opportunity to include BEP in ANC and build their capacity.” — Country expert, Mozambique

PROVIDER CAPACITY FOR BEP PROVISION IS WEAK. There is a need for provider capacity training, job aids, and task shifting from facility to community providers, while balancing provider workload and job description for BEP introduction as part of ANC.

“If the government still decides to integrate such an initiative, then it needs to start with at least simultaneous integration into the medical and nursing schools ... I think it needs to start with or be simultaneously introduced into the pre-service programs as a permanent thing so that everybody coming out of school, every new graduate, whether it’s a nurse, whether it’s a physician, whether it’s a midwife, they need to know that so that it’s truly integrated into the system.” — Global expert

SOCIAL AND BEHAVIOR CHANGE (SBC)

Demand for BEP is needed through social behavior change and community engagement. Targeted strategies around local cultural and social norms, combined with strong counselling for women and engagement with community leaders through platforms such as pregnant women groups, group ANC, and mother-to-mother support groups, are needed.

“I would believe beyond the routine social and behavior change communication that we do in our health sector, there must be an element of combining with social marketing to understand the product itself. How are we going to make that product [BEP] more attractive [and] where is it going to be placed? For example, in health facilities? ... And also consider the pricing, is it going to be offered for free like other supplements or are people going to buy from their own pockets. How much will that be?” — Country expert, Malawi

SUPPLIES AND LOGISTICS

Most country stakeholders emphasized that the creation of a parallel supply chain within CMAM/ IMAM programs targeting pregnant women is a challenge. Ensuring the inclusion of BEP supplements in the essential medicine or nutrition supplies list for prioritization within country governments’ supply chains and clarification on how BEP supplements should be classified as food or medicine is needed, according to country stakeholders’ perspectives.

“There have to be processes in terms of how we integrate that particular product [BEP] into the existing supply chain and management systems within the Ministry of Health. [Depending on the formula]... it is difficult to integrate bulky nutrition commodities within the Ministry of Health supply chain because, for example, for corn soya blend the packaging is bulky and equally the vegetable oil... so because BEP will be recognized as food, there has to be a lot of engagement and consultations in terms of how that can get into the essential supplies list for the Ministry of Health.” — Country expert, Malawi

Acceptability and compliance with BEP with respect to sharing and selling were also identified as key challenges. Mothers often share commodities with family members, which increases demand in households. The issue of sharing should be discussed during counselling with mothers.

Respondents from Ethiopia, Malawi, and Mozambique raised concerns around the acceptability of BEP supplements by government bodies, including around the formulation and how introduction would occur at country level. According to a nutrition expert from Mozambique, “we are moving in a different direction and not including more commodities ... besides the ones that are already being used.”

“I think what’s difficult is when you give it to pregnant women, the main issue isn’t that they wouldn’t want to eat it. It’s that there’s too much competition within the house and the feeling that it needs to go to the children or if it tastes good. If it’s a good product and they can see it works, then competition comes in the household because there isn’t much and there isn’t enough understanding about pregnant women needing to be supported and nourished.”

— Donor organization

Country stakeholders in Mozambique and Malawi highlighted the need for on-the-ground assessments to better understand the context for identification of the right product or modalities for BEP, especially around the use of local foods, local production of a product or global commodity procurement.

“It would be really important for you to come see the conditions of the provinces... provide the guidelines and show the evidence that has [already] been generated in other countries... When we started the blanket supplementary feeding, it was not a program of the Ministry of Health... it only started to be implemented when this crisis of internally displaced persons started.” — Country expert, Mozambique

Most stakeholders mentioned that local manufacturing could ease storage and transportation concerns, particularly for blended products, and raised concerns around the lack of acceptability by country governments and added costs for creation of locally made products.

“Funding is the main issue... these products tend to be expensive and quite often you will find that a [nutrition] treatment for acutely malnourished woman might be more than the health service allocation per person for a year. Nutrition products tend to be bulky, so it’s very difficult to store them and transport them and then monitor their usage.”

— Multilateral organization expert

MONITORING, EVALUATION AND RESEARCH

There is need to identify appropriate data sources and effective data collection approaches from national to subnational levels, including determining how data should be collected and adapting existing data collection tools to include BEP indicators to monitor the distribution, receipt, and impact of the program and post-distribution monitoring.

“In terms of data collection, we need to make sure we have data collection tools at the point of delivery, like registers and reporting forms. We must establish a robust data management and monitoring systems for BEP... This includes a clear reporting flow from the community to the facility, then to the district level and finally to the national DHIS2. It’s important to ensure that the indicators for BEP are integrated into the district health information system.”

— **Country expert, Malawi**

The Maternal BEP Studies Harmonization Initiative is an ongoing meta-analysis that aims to harmonize outcomes analyzed in maternal BEP supplementation studies during pregnancy and lactation for maternal health and growth for infants. Seven studies from Burkina Faso, Ethiopia, India, Nepal, and Pakistan are included in the initiative. Effectiveness trials in Bangladesh, Burkina Faso, Nepal, and Pakistan are testing the Gates Foundation-recommended BEP formulation. In Bangladesh, investigators are examining the effect of fortified BEP supplementation on birth weight and adverse birth outcomes of LBW (LBW < 2500 g) and SGA. In Nepal, the efficacy of a daily BEP supplement during pregnancy and the first six months following childbirth are being examined in relation to pregnancy outcomes and infant growth. Both studies will have available data in 2024.

Meanwhile, the WHO is developing global implementation guidance on BEP supplementation to address challenges and concerns in operationalizing its ANC guidance.

“We’re not revising the guideline, we’re operationalizing it. We’re building on the guideline to clarify implementation... So, the first exercise we undertook was to understand what are the actual challenges and concerns in terms of BEP implementation... The implementation guidance will be at the global level, not country-specific.”

— **Multilateral organization expert**

PROGRAM CONSIDERATIONS

To successfully introduce BEP supplementation into country ANC platforms, MOMENTUM recommends several program considerations.

GLOBAL LEVEL

POLICY AND GUIDANCE

- Standardize the global definition of BEP to guide countries.
- Standardize BEP performance indicators to monitor its context-specific implementation and outcomes based on existing WHO ANC guidance.
- Develop global implementation guidance for BEP supplementation and take into consideration how BEP will be provided alongside other interventions in the ANC package and supplementary foods programs.¹⁰

COUNTRY LEVEL

To ascertain the readiness for the introduction of BEP, country program implementers and government stakeholders should consider the following: service readiness, product identification and supply system, SBC, and research.

SERVICE READINESS

- Ascertain the level of burden of underweight at both national and subnational levels, including among adolescents, and the need and urgency to include BEP by 1) reviewing existing data or 2) collecting data on prevalence of underweight among pregnant women (> 20 %) in selected areas of the country.
- Assess the current situation of underweight among pregnant women by reviewing existing nutrition reports and programs and projects in the country that provide BEP along with country priorities to better understand how, where, and when to start introduction of BEP via ANC.
- Identify implementation platforms whether as part of ANC services or existing programs, i.e., supplemental feeding programs like CMAM.
- Assess health workforce limitations, service provider capacity, and approaches for delivering BEP, including task shifting.
- Ensure provider training includes updated guidance on BEP (i.e. in-service, and pre-service, if possible).

PRODUCT IDENTIFICATION AND SUPPLY SYSTEM

- Gain consensus on the definition and composition of BEP supplements in country—which products and formulations are given to pregnant/lactating women—to ensure that these meet the globally recommended standards.
- Evaluate the type of BEP supplement based on convenience, meal replacement risk, packaging ease, safety, and transport considerations and form, based on sharing risks, stability, packaging cost, taste, nutrition specifications, salt and sugar content, and energy density.

SBC

- Conduct research or review existing data on how women perceive and use supplements based on cultural and social determinants and use of locally available foods.
- Ascertain providers' level of understanding and skillsets around BEP provision during ANC.
- Ensure that providers are equipped with appropriate and updated counselling skills and associated materials, which can be integrated as part of ANC, as needed.

RESEARCH

- Review evidence from ongoing clinical trials, when available, on optimal BEP composition, including regional fortification and dietary impact and possible local production.
- Improve understanding of various approaches (i.e., targeting households vs. blanket approaches) with regards to cost, training, health service delivery efficiency, optimal cutoffs by MUAC and BMI, and any drawbacks in communities (i.e., actual increased risk of overweight/obesity, increased cost due to the need for more BEP products for blanket supplementation).
- Use country program data to document the cost-effectiveness of delivering BEP supplementation through routine ANC.

CONCLUSION

Balanced energy protein supplementation holds great promise in improving maternal and neonatal health outcomes, particularly in areas with high rates of maternal underweight. Ongoing effectiveness trials will provide critical data to inform the integration of BEP into maternal health care programs. By considering the programmatic recommendations outlined in this policy brief, countries can enhance the reach, quality, and sustainability of BEP supplementation within ANC platforms, contributing to healthier pregnancies and improved birth outcomes.

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