



Importance of nutrition in pregnant women

Sara Eloísa Del Castillo-Matamoras, ND, Lc, MSc, PhD¹; Natalia E. Poveda, ND, MSc, PhD(c)²

Overweight and obesity, which are part of the spectrum of malnutrition affecting pregnant women, is approached in this issue of the *Revista Colombiana de Obstetricia y Ginecología* (RCOG). The authors present an ethnography-focused qualitative study designed to gain a thorough understanding of the barriers faced by overweight pregnant women in achieving an adequate diet and, consequently, adequate food intake during gestation. This study concludes that there are five barriers, including proximal factors (such as feeding habits mediated and influenced by family and cultural factors, current health status or health status during previous pregnancies, and awareness of the adverse effects of excess weight), intermediate factors related to care during pregnancy (such as the role played by healthcare providers in terms of dietary and nutritional education), and structural factors such as poverty. There is a need to recognize the importance and complexity of nutrition during pregnancy given that it is a state of greater nutritional vulnerability unlike other stages of a woman's life, and which also underpins the future health and nutritional status of her fetus, determining, to a large extent, future health in adult life (1).

Consequently, the food intake of women during gestation calls for a reflection about health and nu-

trition throughout the pregestational, gestational and breastfeeding continuum, since these conditions will vary in response to the high demands of nine months of pregnancy and two years of breastfeeding. Thinking about the magnitude of diet in women as a whole should revolve around more comprehensive actions to prepare and protect the female population vis á vis this triple nutritional and dietary challenge (1).

The definition of nutritional status is the body's condition as influenced by the intake, absorption and use of nutrients, as well as disease-related factors. The hypothesis on the Developmental Origins of Health and Disease (DoHAD), proposed by Barker in the 80s based on birth cohort studies in Great Britain and later supported by animal studies, evidences the importance of the first days and months of life of individuals in determining their health status and predisposition to disease in the short, medium and long term (adult life) (2).

Early life (from conception to approximately two years of life) is a sensitive period of plasticity, which means that developing cells and organs adapt to environmental factors affecting the mother, for example, stress, infections, alcohol consumption, smoking, chronic diseases, obesity and malnutrition, which in turn determine individual susceptibility to a certain risk of disease in adult life (3). During gestation, the fetus is particularly susceptible to environmental factors such as nutrient availability and energy balance, which are essential for optimal growth and development. But not only is gestation a stage of high energy and nutritional demand (especially during the second and third trimesters) for the developing fetus, but it is also a stage of preparation for an even greater energy

1. Associate professor, Observatorio de Soberanía y Seguridad Alimentaria y Nutricional, Facultad de Medicina, Universidad Nacional de Colombia, Bogotá (Colombia).

1. Nutrition and Health Sciences Doctoral Program, Laney Graduate School, Emory University, Atlanta (United States).

demand as is the case of breastfeeding (4).

In nutritional and metabolic terms, the first half of gestation is characteristically an anabolic phase - during which the woman's body adapts to build substantial energy stores through fatty acids and protein, and by means of changes in insulin sensitivity - and is followed by a catabolic phase during which maternal stores are mobilized to reach the fetus through the placenta, in order to ensure adequate fetal growth (5). During this initial phase, the demand of micronutrients is also very high, key among them folic acid (critical for "one-carbon metabolism", precursor of the nucleic acids required for cell replication), iron (needed for building several proteins, including hemoglobin, essential for oxygen transport and, therefore, cellular respiration), and calcium (needed for bone formation and intracellular communication) (6). Importantly, biochemical pathways in which these three micronutrients participate require other intermediary vitamins and minerals to enable biochemical reactions. The greater anabolic activity which, to a large extent, drives the increased demands of nutrients, must be one of the primary concerns of during gestation due to the strong association with adverse pregnancy outcomes when nutritional care is not considered a priority or is not part of core actions during gestational care (7).

Therefore, adequate diet and nutrition during pregnancy, with the appropriate supplementation of the three micronutrients mentioned above (due to the high physiological demands imposed by human gestation), are needed to provide the energy reserves and the pool of macro and micronutrients that enable the countless cell replication and differentiation reactions. These, together with the physiological substrates, ensure optimal fetal growth and development. Adequate diet during gestation clearly contributes to preventing problems such as intra-uterine growth retardation, excess or low birthweight, neonatal and maternal morbidity and mortality, as well as complications at the time of delivery, all of which are strongly influenced by the nutritional status of the pregnant woman.

However, Colombia is still a long way from ensuring adequate nutritional status for all pregnant women, due to the coexistence of undernutrition or overweight/obesity in its population. The authors present an ethnography-focused qualitative study de-

signed to gain a thorough understanding of the barriers faced by overweight pregnant women in achieving an adequate diet and, consequently, adequate nutrition during gestation. According to the latest National Nutritional Situation Survey (*Encuesta Nacional de la Situación Nutricional [ENSIN 2015]*), 14.2% of pregnant women between 10 and 49 years were low-weight, the percentage of low-weight women being even higher among pregnant adolescents (21.4%, variation coefficient $\geq 20\%$). The prevalence of low weight dropped only by one percent point when comparing data for 2010 and 2015 (8). On the other hand, the highest percentage of overweight women was observed in adult pregnant women, with a national prevalence of 42.6%, and an increase of almost 4 percent points between 2010 and 2015 when comparing excess weight data in pregnant women between 10 and 49 years of age. Regarding micronutrient stores, the ENSIN 2015 revealed a high prevalence of anemia (26.2%), iron deficiency (44.5%), vitamin B12 deficiency (11.6%), and vitamin D deficiency (32.8%) in pregnant women 13 to 49 years of age (8).

The situation in this country is a source of concern, considering that there is substantial evidence in the literature showing that malnutrition in all its forms is associated with a high risk of morbidity and mortality of the mother-infant pair, a higher risk of adverse effects and complications such as pre-term delivery, low birthweight and/or fetal macrosomia, cesarean delivery, higher risk of childhood obesity and cardiometabolic disease in adulthood, and maternal complications such as preeclampsia, gestational diabetes, greater postpartum weight retention and obesity, with the subsequent higher risk of suffering from non-transmissible chronic disease in later years, after pregnancy (9,10).

Therefore, one of the key actions to promote as part of public policy guidelines pertaining to the pregnant population is constant monitoring of their nutritional status as a measure to generate early warnings to protect the mother and the baby, as the focus of care in infancy, in order to ensure nutritional safety and contribute to the realization of their right to adequate nutrition. Assessing nutritional status during pregnancy should be one of the most impor-

tant goals of health services; maintaining optimal nutritional status in pregnant women affords direct protection to the growth, development and health of the future baby (1).

On the other hand, health promotion in women during pregnancy and breastfeeding, as well as in children under 2 years of age, is the most important measure for the prevention of diet-related malnutrition and non-transmissible chronic disease. This should be accomplished within the political, social and cultural contexts of this population. It is a public policy action which ought to have been given greater visibility in the guidelines for the Sustainable Development Goals instead of being nested under a global objective that would bring it only skin-deep attention as part of the actions addressed to this population. Educating expectant families about the adoption of culturally appropriate healthy lifestyles and healthy dietary practices that contribute to the prevention of malnutrition and non-transmissible chronic diseases in pregnant women, breastfeeding mothers and children under 2 years of age must be a priority in all current comprehensive pregnancy care programs, in order to ensure optimal nutrition for a large proportion of the world population (11).

REFERENCES

1. Martínez García RM, Jiménez Ortega AI, Peral-Suárez A, Bermejo LM, Rodríguez-Rodríguez E. Importancia de la nutrición durante el embarazo. Impacto en la composición de la leche materna. *Nutr. Hosp.* 2020; 37, (N.º Extra 2):38-42. <https://dx.doi.org/10.20960/nh.03355>.
2. Barker DJ. The developmental origins of well-being. *Philos Trans R Soc Lond B Biol Sci* 2004; 359(1449):1359-66. <https://doi.org/10.1098/rstb.2004.1518>
3. Mandy M, Nyirenda M. Developmental Origins of Health and Disease: the relevance to developing nations. *Int Health.* 2018; 10(2):66-70. <https://doi.org/10.1093/inthealth/ihy006>
4. King JC. Physiology of pregnancy and nutrient metabolism. *Am J Clin Nutr.* 2000; 71(Suppl 5):1218S-25S. <https://doi.org/10.1093/ajcn/71.5.1218s>
5. Tan EK, Tan EL. Alterations in physiology and anatomy during pregnancy. *Best Pract Res Clin Obstet Gynaecol.* 2013; 27(6):791-802. <https://doi.org/10.1016/j.bpobgyn.2013.08.001>
6. Mousa A, Naqash A, Lim S. Macronutrient and Micronutrient Intake during Pregnancy: An Overview of Recent Evidence. *Nutrients.* 2019; 11(2):443. <https://doi.org/10.3390/nu11020443>
7. Observatorio de Soberanía y Seguridad Alimentaria y Nutricional. Determinantes Socioeconómicos y Alimentarios de Gestantes atendidas en la Red Pública del DC, Informe SISVAN 2016. En prensa 2016.
8. Gobierno de Colombia. Encuesta Nacional de Situación Nutricional (ENSIN) 2015. Instituto Colombiano de Bienestar Familiar, Instituto Nacional de Salud, Universidad Nacional de Colombia; 2015.
9. Kominiarek MA, Peaceman AM. Gestational weight gain. *Am J Obstet Gynecol.* 2017; 217(6):642-651. <https://doi.org/10.1016/j.ajog.2017.05.040>
10. Champion ML, Harper LM. Gestational Weight Gain: Update on Outcomes and Interventions. *Curr Diab Rep.* 2020; 20(3):11. <https://doi.org/10.1007/s11892-020-1296-1>.
11. Instituto Colombiano de Bienestar Familiar, Organización de las Naciones Unidas para la Alimentación y la Agricultura. Manual del facilitador: Guías Alimentarias Basadas en Alimentos para Mujeres Gestantes, Madres en Periodo de Lactancia, Niños y Niñas menores de 2 años para Colombia. Bogotá: ICBF, FAO; 2018.