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FAN, TA'LIM VA AMALIYOT INTEGRATSIYASI

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NUTRIENT RECOMMENDATIONS AND DIETARY GUIDELINES FOR PRAGNENT WOMEN

Abstract: At present, maternal and child health and upbringing of harmoniously developed generation have been identified as priorities of state policy in our country. Proper nutrition of children from infancy not only improves their physical health, but also reduces the risk of contracting infectious diseases and contributes to the further development of their social and psychological condition.

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Nutrient needs typically increase more during pregnancy than during any other stage in a woman's adult life. Additional nutrients are required during gestation for development of the fetus as well as for growth of maternal tissues that support fetal development. The materials required for this rapid growth and development depend on supply from the maternal diet. However, because of the differing roles nutrients play in tissue development and growth as well as nutrient-specific changes in maternal homeostasis during pregnancy, nutrient requirements do not increase uniformly. Changes in the efficiency of absorption from the gastrointestinal tract and excretion by the renal system, as well as changes in

maternal storage or tissue reserve, are examples of homeostatic mechanisms that must be considered in establishing nutrient requirements during gestation. Because the demand for some nutrients is great relative to others, care must be taken in selecting the optimal diet during pregnancy. The purpose of the first section of this chapter is to describe the Dietary Reference Intakes (DRIs) for pregnancy, outline how they compare to the DRIs in the nonpregnant state, and explain the physiological reasons for adjusting nutrient requirements during pregnancy. Emphasis is on nutrients with relatively high increases in demand relative to prepregnancy. This does not imply that other nutrients are not critical for a healthy pregnancy outcome, but that if increased intake for nutrients with the largest relative demand is achieved, and a mixed diet is consumed, then it is likely that the needs for other nutrients will be met as well. In the subsequent section of the chapter, nutrient requirements are translated into foods according to the most recent dietary guidelines.

The DRIs, released from 1997 to 2005 by the Institute of Medicine of the National Academies (IOM), differ from previous recommendations [1]. The recommendations continue to be based on scientifically valid experiments with emphasis on in vivo studies in humans (rather than in vitro or animal experiments), reliable intake data, and whenever possible, measurements of relevant biomarkers. In the most recent recommendations, however, the role of nutrients in promoting and protecting health is emphasized. Prevention of nutrient deficiencies was not the only criterion used. Further, differences in the strength of the scientific evidence available for establishing nutrient requirements were delineated. For nutrients with sufficient available evidence, an RDA was established equivalent to the amount needed to meet the nutrient requirements of nearly all (≈97.5%) healthy individuals for a given gender and stage of life. When insufficient evidence was available to formulate an RDA, an Adequate Intake (AI) was provided. An AI is typically based on the amount that people normally consume, and, because it involves more expert discretion, must be applied with greater caution than does an RDA. Despite these differences, both RDAs and AIs are reference values for normal, healthy individuals eating a typical mixed North American diet. A given individual may have physiological, health, or lifestyle characteristics that require tailoring of specific nutrient values.

Energy needs during pregnancy vary according to a woman's basal metabolic rate, prepregnancy weight, amount and composition of weight gain, stage of pregnancy, and physical activity level. It is estimated that on average a pregnant woman requires a total of 85,000 additional calories over the course of 40 weeks of pregnancy, which extrapolates to approximately 300 extra calories per day [3]. For most women, however, energy needs in the first trimester of pregnancy are minimal. While the first trimester is characterized by rapid development of fetal organs and tissues, these processes are not very energy intensive. Maternal basal metabolic rate, for example, does not measurably increase until the fourth month of pregnancy when notable increases in growth of the uterus, mammary glands, placenta and fetus, and increases in blood volume and the work of the heart and respiratory system begin. As a woman's weight increases, she also requires more energy to accomplish the same amount of physical work such that even if physical activity levels remain unchanged from prior to pregnancy, the energy costs of these activities increase. When the new DRIs for macronutrients were released in 2005 [4], a new approach was used to estimate the energy requirements of pregnancy. Since total energy expenditure (TEE) had been measured using doubly labeled water in several hundred pregnant women, those data were used as the basis for the recommendation. The Estimated Energy Requirement (EER) for pregnancy is derived, therefore, from the sum of the TEE in nonpregnant women plus a

median change in TEE of 8 kcal/week plus 180 kcal/day in the second and third trimesters to account for the energy deposition in tissue gained. At 20 weeks' gestation, the additional energy required totals 340 kcal/day; at 34 weeks gestation the additional energy need is 450 kcal/day.

Protein. During pregnancy, additional dietary protein is used for fetal growth, placental development, production of amniotic fluid, increased maternal blood volume, and gain of other maternal tissues. Increases in protein needs mirror maternal and fetal growth rates; early in pregnancy, the requirements for extra protein are relatively small, but increase progressively as pregnancy proceeds. Approximately 82% of the total demand for the 925 g of protein required for maternal and fetal needs is accumulated over the last half of gestation [12]. Inadequate maternal protein intake incurs risk of low birth weight. A factorial approach was used to calculate the protein DRI during pregnancy. The summation of the additional lean tissue accumulated in pregnancy and the additional protein required to maintain an increased body weight were estimated as outlined in

Water-Soluble Vitamins Requirements for most water-soluble vitamins increase during pregnancy. Folate and vitamin B6 will be emphasized in the following discussion because increases in demand associated with pregnancy are relatively high (50% for folate, 46% for vitamin B6), and average intakes of these water-soluble vitamins relative to requirements are generally lower than for other water-soluble vitamins.

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