

NUTRITION - PREGNANCY

Effective Nutritional Practices and Policies for Childbearing and Childrearing Women

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Introduction

Adequate nutrition in women is one of the most crucial components of a healthy society. Many of the chronic, ongoing problems that women experience in the areas of health, employment, and productivity can be alleviated if they receive adequate nutrition throughout their life cycle. This paper will present the programs that reduce the prevalence of malnutrition in women at a macro (or societal) level, or that are effective at a micro (or individual) level, and those that emphasize the importance of maternal nutrition from a life-course perspective.

Subject Relevance

Poor nutrition in women creates a self-perpetuating cycle. Infants born with low birth weight or presenting with retarded growth are at risk for higher-than-average rates of morbidity and mortality during infancy and childhood, and rate lower-than-average in their productivity as adults.^{1,2} Women who were malnourished as children, or who are currently malnourished as evidenced by underweight Body Mass Index (BMI), enter their reproductive years with inadequate

nutritional stores, a strong predictor of low infant birth weight and increased infant mortality.^{3,4} Nutritional supplementation in childhood has been shown to have a significant effect not only on a girl's growth, but also on her subsequent children.⁵ Stunted growth in infants (the strongest marker for inadequate nutritional status) is more closely related to inadequate prenatal nutrition in mothers than it is to postnatal environmental factors.⁶ In addition, malnourished women with short inter-pregnancy intervals enter each pregnancy with depleted physical resources, thereby perpetuating the cycle of mother-child malnutrition.⁷

Problems

No single method for ensuring adequate nutrition to childbearing women has been identified to date. Indeed, nutritional counselling for malnourished women during pregnancy or during inter-pregnancy intervals has not been shown to be an effective method for reducing malnutrition.⁸ The supplemental ingestion of important nutrients such as iron, folate, and calcium is contingent upon the availability of supplements, the purchasing power of poor women, and their toleration of side effects from some supplements such as iron.⁹ Some authors argue for a social ecological approach to ensure that reproductive-aged women receive sufficient folic acid supplementation prior to conception and during the first trimester.¹⁰ The diets of pregnant women have been shown to have no significant differences, in regards to micronutrients, from the diets of non-pregnant women; pregnant women also have inadequate knowledge of general and prenatal nutrition.^{11,12} The reduction of protein energy malnutrition (PEM) is contingent upon adequate supplies of high-quality food that may also be beyond the purchasing power of poor families. It is difficult for impoverished, malnourished women to achieve adequate nutrition, especially if they lack access to education that could increase their knowledge of health and nutrition.

Research Context

Research has been conducted regarding the improvement of women's nutrition at the macro (or societal) level as well as the micro (or individual) level. At this time, the majority of studies conducted have been pilot projects or program projects, with little research regarding large, society-wide programs for women.¹³ A recent review of the Special Supplemental Nutrition Program for Women, Infants and Children (WIC program, a large program in the United States) examining the records of 60,731 pregnant women, demonstrates that WIC has notable cost-savings outcomes for infants.¹⁴ However, the documented positive outcomes for mothers were limited to a reduction in days of postpartum hospitalization. Other authors report that WIC has a

positive impact on children' health, but maternal health outcomes are rarely reported, and have been confined to reduction in iron deficiency anemia.¹⁵⁻¹⁷ Most often, nutrition programs targeting women have used infant outcomes as their measures of success rather than the health outcomes of their women subjects.¹⁸

Recent Research Results

Mora and Nestel¹⁸ have provided a summary of policy initiatives in developing countries that can improve prenatal nutrition. They concluded that increasing policy support for women's education, legislating for women's nutrition, financing health services for women, and integrating women into the planning systems for health care and nutrition services can effectively reduce the life cycle of malnutrition among women and children. Studies examining the effects of micronutrient supplementation during pregnancy have demonstrated positive effects in infant weight, size, and length of gestational age,¹⁹⁻²² but few studies have examined the impact of supplementation on maternal health.²³ A comprehensive view of women's health and nutrition should acknowledge the importance of women's education as the primary step in reducing malnutrition.^{24,25} Lengthening inter-pregnancy intervals by providing contraception in a culturally sensitive manner can also reduce the depletion of a woman's nutritional stores due to frequent pregnancies. Family planning services must therefore be integrated into postpartum services. In addition, support must be provided for breastfeeding—an important contributor to child survival in developing countries.²⁶

Similarly, nutritional services should be integrated into health care services. Existing programs that target women and children's health should also be integrated, so that a woman can receive care for herself, her children, and nutritional supplementation during one visit or in one locale. These programs should be desired and supported by the community, and the community should have a say in the services provided through these programs. Children's diets tend to resemble their mothers,²³ so obtaining diet histories for either a mother or child may be a feasible way to screen for adequate nutrition for the maternal child pair. Dietary counselling and nutrition information also needs to be provided in a culturally competent manner, as research has demonstrated that grandmothers, eating customs, and locally available foods often determine what foods are consumed by mothers and children.^{27,28}

The most efficient and effective way to increase the levels of iron, folate, and calcium in women appears to be through the nutritional supplementation of certain foods in their diets.²⁹ Research conducted in Denmark demonstrated that a minority of pregnant women took 400 mcg of folic

acid during the peri-conceptual period. The authors conclude that folic acid fortification of foods is the best way to reach a majority of women.³⁰ Since 1998, all enriched grains and cereals in the United States have been fortified with 140 micrograms of folate per 100 grams of grains or cereal.³¹ In fact, it can now be said that the prevalence of iron-deficiency anaemia in women of reproductive age has been reduced largely through the nutritional supplementation of breakfast cereals in the U.S.^{9,32} In England, low-income mothers who consumed breakfast cereals fortified with folate and iron were more than twice as likely to have an adequate diet as a group of low-income mothers who did not consume breakfast cereals.⁸ Food manufacturers are also adding calcium to a variety of foods (e.g., orange juice) in the U.S., allowing women who consume inadequate amounts of dairy products to increase their calcium consumption.

Fetal programming

Fetal programming is the hypothesis that maternal and fetal nutrition can have a profound, lifelong effect on the health of the child as an adult.³³⁻³⁷ Much of the recent literature concerning women's nutrition during pregnancy is focused on the impact of the maternal diet on the intra-uterine environment, and the effect that in turn has on the developing fetus. Fetal nutritional deprivation is seen as a strong stimulus for development of heart disease, hypertension, and type 2 diabetes,^{38,39} structural defects of the hippocampus,⁴⁰ defects in immune function,⁴¹ and development of depression in later life.³⁴ Some researchers think that efforts to address the increasing obesity epidemic may be most effective if they are addressed through public-health policies ensuring adequate nutrition to all women, and not from an individual-focused approach.⁴²⁻⁴⁴

Conclusions

Reducing malnutrition and avoiding obesity among childbearing women should not be confined to interventions during pregnancy. A life cycle approach to women's nutrition will acknowledge that adequate nutrition for women is not only important to their health but also to the health of their children and families. Women should be assessed for diet adequacy during family planning visits (e.g., haemoglobin measurement, diet history, BMI measurement); education should be provided in elementary and secondary schools on nutrition and health care, and women should be advised to space pregnancies at least 18 to 24 months apart to allow their bodies to recover their nutritional stores.⁶ Pregnant adolescents are an especially vulnerable group as their risk of maternal mortality is two to five times greater than that of older women.⁴⁵ The most effective dietary interventions for reducing malnutrition center on public health approaches such as food

fortification, comprehensive nutritional supplementation programs for all low-income women, community-based provision of health care, and education for all about the importance of nutrition. The most effective approaches for reduction of obesity focus on public-health infrastructure issues such as promotion of physical activity in the environment, availability of high quality foods at fast food venues and vending machines, and provision of low calorie beverages.⁴⁶

Implications for Development and Policy

In the US, lack of political support for a broad-based approach to nutrition has hampered the practical application of research. The provision of high quality nutrition for women during their life cycle should be seen as an investment in the health of the population and not just a method to increase the birth weights of infants during pregnancy. The fetal programming hypothesis supports the view that fetal under or over nutrition will impact obesity and levels of chronic diseases for generations in the future. Further support for research is needed to define adequate diets for non-pregnant, pregnant, lactating, and postpartum women. More research is also required to determine how anthropometrics and laboratory values should be used as indicators of malnutrition or over nutrition. Political support is necessary to address the disparities in nutrition found in wealthy, developed countries and to create culturally sensitive methods of delivering nutritional services. Behavioural studies must be conducted to examine women's eating patterns and determine effective ways of changing dietary habits. Finally, as policy is often driven by program cost, nutritional programs must integrate methods of cost analysis to demonstrate the cost effectiveness of providing adequate nutrition for women throughout their life cycles.

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