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## Malnutrition in women: A review

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### Abstract

Malnutrition in women refers to a condition in which women have an inadequate intake of nutrients, resulting in physical and mental health problems. Malnutrition can affect women of all ages and can be caused by various factors, such as poverty, lack of access to food, and cultural practices that limit food intake. Malnutrition can have serious consequences for women, including an increased risk of morbidity and mortality, reduced fertility, and poor maternal and child health outcomes. Addressing malnutrition in women requires a multifaceted approach that includes improving access to nutritious food, promoting healthy eating behaviors, and addressing underlying social and economic determinants of health.

**Keywords:** Malnutrition, women, nutrients

### Introduction

Malnutrition is a serious public health issue affecting a significant proportion of reproductive age women worldwide. Women are mostly vulnerable to malnutrition due to the intake of unbalanced foods, low economic status, low education background, marital status, and age [1]. Evidence shows that one-third of women suffer from malnourishment. Maternal nutritional status is important for herself and her offspring, and In conclusion, malnutrition among women is a serious public health issue that requires urgent attention. Women are particularly vulnerable to malnutrition due to a variety of factors, including poverty, limited access to healthcare and education, and cultural and social norms that may restrict their access to nutritious foods. Malnutrition in women can have serious consequences for both the woman and her children, including increased risk of maternal mortality, poor pregnancy outcomes, and complications during childbirth.

Addressing malnutrition in women requires a multi-sectoral approach that addresses the root causes of the problem. This includes improving access to nutritious food, promoting education and healthcare for women, and addressing social and cultural norms that may limit women's access to resources. Targeted interventions such as food fortification, supplementation, and nutrition education can also be effective in addressing malnutrition in women.

Overall, addressing malnutrition in women is essential for promoting the health and wellbeing of women and their children, and for achieving global health and development goals. It requires sustained efforts from governments, civil society, and the private sector to ensure that women have access to the resources they need to maintain good health and nutrition. is observed among women of reproductive age in many countries [2].

Malnutrition among women of reproductive age is a primary public health problem in many South Asian and sub-Saharan African countries [3]. Malnutrition can cause poor pregnancy outcomes such as obstructed labor, premature birth, low-birth-weight babies, and postpartum hemorrhage [3]. Therefore, it is important to encourage women to attend nutrition education to have a better understanding of their nutritional status [1].

Malnutrition during pregnancy can have irreversible short- and long-term effects on maternal and fetal health. Studies have shown that maternal malnutrition during pregnancy is related to neonatal complications such as abortion, pre-term birth, low birth weight, and infants born small or large for gestational age. Maternal malnutrition has also been associated with long-term neonatal complications such as impaired brain development, poor cognitive and behavioral capacity, and functional impairment in adulthood. Maternal under nutrition may dispose mothers to poor wellbeing including infection, preeclampsia/eclampsia, and adverse pregnancy outcomes such as preterm birth and intrauterine growth retardation. Pregnant women are exposed to nutritional deficiency because of increased metabolic needs, which usually ends up in under nutrition. Therefore, it is important to manage gestational weight gain and prevent or treat nutrient deficiencies related to pregnancy to promote healthier pregnancies [4, 5].

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Epidemiological studies have shown that lower birth weight is associated with a wide range of adverse outcomes in later life, including poorer 'human capital' (shorter stature, lower cognitive performance), increased risk factors for later disease (higher blood pressure and reduced glucose tolerance, and lung, kidney and immune function), clinical disease (diabetes, coronary heart disease, chronic lung and kidney disease), and increased all-cause and cardiovascular mortality. Therefore, maternal nutrition during pregnancy is crucial for healthy fetal development [6].

### **Specific nutrients that is crucial for fetal immune system development during pregnancy**

Maternal dietary micronutrients and omega-3 fatty acids support the development of the fetal and neonatal immune system. However, limited publications were identified that directly explored maternal immunity in pregnancy and the effects of micronutrients. Some of the essential nutrients for fetal immune system development during pregnancy include vitamin A, Maternal dietary micronutrients and omega-3 fatty acids support the development of the fetal and neonatal immune system. However, limited publications were identified that directly explored maternal immunity in pregnancy and the effects of micronutrients. Some of the essential nutrients for fetal immune system development during pregnancy include vitamin A, C, D, and E, B12; choline; iodine; iron; selenium; zinc; and docosahexaenoic/eicosapentaenoic acid. Adverse factors that impair fetal growth hinder immunological maturation as well, including maternal malnutrition, smoking, alcohol and other substance abuse, placental insufficiency, and infection [7]. The immunocompetence of low birth weight infants is compromised, and those who are small for gestation show persistent immunological impairment for several months, even years. Prolonged effects on immune responses can be seen in animal models of fetal malnutrition, C, D, and E; choline; iodine; iron; selenium; zinc; and docosahexaenoic/eicosapentaenoic acid [8]. Adverse factors that impair fetal growth hinder immunological maturation as well, including maternal malnutrition, smoking, alcohol and other substance abuse, placental insufficiency, and infection. The immunocompetence of low birth weight infants is compromised, and those who are small for gestation show persistent immunological impairment for several months, even years. Prolonged effects on immune responses can be seen in animal models of fetal malnutrition [9].

### **How malnutrition during pregnancy affects the immune system of the fetus**

Limited evidence suggests that intrauterine nutrition deficiency could lead to functional deficit in the infant's immune function, and child vaccine response may be negatively affected by maternal malnutrition. Response to childhood vaccination may be associated with fetal and early life environment, and evaluation of programs should take this into account. Adverse factors that impair fetal growth hinder immunological maturation as well [9]. These includes maternal malnutrition, smoking, alcohol and other substance abuse, placental insufficiency, and infection. The immunocompetence of low birth weight infants is compromised; those who are small for gestation show persistent immunological impairment for several months, even years. Prolonged effects on immune responses can be

seen in animal models of fetal malnutrition. Maternal immune response changes under obesity stress in normal pregnancy and spontaneous abortion models, and how pregnancy obesity and maternal immune regulation are mutually influenced [10].

### **Role of iron and zinc in fetal immune system development during pregnancy**

Iron and zinc are essential minerals required during pregnancy for the normal development and growth of the fetus. Iron is required for maternal blood volume expansion and fetal development, and iron deficiency is the most common nutrient deficiency during pregnancy [11]. Imbalances in iron metabolism correlate with severe adverse pregnancy outcomes. On the other hand, zinc is important for the normal physiological functions of the immune system, and gestational zinc deficiency has been confirmed to impair the infant immune function [12]. Zinc deficiency during pregnancy causes irreversible effects on the newborn such as growth impairment, spontaneous abortion, congenital malformations, and poor birth outcomes. Zinc deficiency is a public health problem among pregnant mothers, and improving maternal nutritional knowledge and ensuring access to zinc sources food items should be delivered for pregnant mothers to reduce zinc deficiency [13].

### **Recommended diet for pregnant women to prevent malnutrition**

To prevent malnutrition during pregnancy, pregnant women should consume a variety of food items to meet their requirement of macro and micronutrients. Consuming foods rich in iron such as green leafy vegetables, lean red meat, and beans can help prevent anemia [4]. Women with under nutrition before and during pregnancy have an increased risk of complications during labor and birth, so it is important to manage gestational weight gain and prevent or treat nutrient deficiencies related to pregnancy. The recommended weight gain during pregnancy is 10-12 kg. Nutrition programs must contend with a variety of social, economic, health, and legislative approaches for improving women's status. Food supplementation during pregnancy and adolescence are as important as raising the marriage and conception age. Energy deficits of iron, vitamin A, and iodine need to be fulfilled. Nutrition education for promoting adequate nutritional and energy intake is also important [14].

### **Government measures to tackle malnutrition in women**

There are several government measures that can be taken to tackle malnutrition in women. Nutrition programs must contend with a variety of social, economic, health, and legislative approaches for improving women's status. Food supplementation during pregnancy and adolescence are as important as raising the marriage and conception age. Energy deficits of iron, vitamin A, and iodine need to be fulfilled. Energy-saving devices would help to reduce the physical demands on women during pregnancy [15]. Nutrition education for promoting adequate nutritional and energy intake is also important. Multisectorial collaboration and coordination among related sectors and strengthening programs targeted on adult's educational status, improved drinking water and sanitation against pregnant women's, counseling on Antenatal clinic and prevention and treatment of chronic disease during pregnancy are also important measures that can be taken by the government to tackle malnutrition in women [16].

## Conclusion

In conclusion, malnutrition among women is a serious public health issue that requires urgent attention. Women are particularly vulnerable to malnutrition due to a variety of factors, including poverty, limited access to healthcare and education, and cultural and social norms that may restrict their access to nutritious foods. Malnutrition in women can have serious consequences for both the woman and her children, including increased risk of maternal mortality, poor pregnancy outcomes, and complications during childbirth. Addressing malnutrition in women requires a multi-sectoral approach that addresses the root causes of the problem. This includes improving access to nutritious food, promoting education and healthcare for women, and addressing social and cultural norms that may limit women's access to resources. Targeted interventions such as food fortification, supplementation, and nutrition education can also be effective in addressing malnutrition in women.

Overall, addressing malnutrition in women is essential for promoting the health and wellbeing of women and their children, and for achieving global health and development goals. It requires sustained efforts from governments, civil society, and the private sector to ensure that women have access to the resources they need to maintain good health and nutrition.

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