

# Prenatal Care

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Contributor: Juan Miguel Martínez-Galiano , Naomi Cano-Ibáñez , Antonio Hernández-Martínez , Miguel Delgado-Rodríguez

Care in the preconception stage and during pregnancy are essential for the health of the mother and the baby. Maternal feeding plays a fundamental role as a modulator of the prevention of maternal and fetal pathology.

prenatal care

maternal diet

pregnancy

nutrition

early programming factors

## 1. Introduction

A correct diet is essential in order to maintain an adequate nutritional status at all stages of life. During pregnancy, nutritional needs are increased in order to meet fetal requirements. Nutrition plays a fundamental role within the known concept of early programming factors, during both the gestational period and the preconception stage. For this reason, it is important to carry out a detailed analysis of lifestyle factors before a woman becomes pregnant in order to identify the factors that may influence her health and, either directly or indirectly, the health of her future baby. It is especially important, both before and during pregnancy, to conduct comprehensive health promotions which focus on the promotion of healthy lifestyles, empowering women to make the decisions needed for the acquisition of safe and healthy eating habits that guarantee a good health result, i.e., “a term pregnancy with the lowest physical risk and the highest quality of life possible for the pregnant woman and the birth of a healthy baby” [1].

During the care provided to women through primary health care for preconception health, carried out in the year before becoming pregnant, different aspects must be addressed. This care, although it has common components, should be adapted to the reality and needs of each woman. Thus, emphasis should be placed on adopting healthy lifestyles where the basic premises are as follows: maintaining an active lifestyle with adequate physical activity, avoiding alcohol consumption, encouraging smoking cessation, and promoting a balanced diet, among others. Pre-existing conditions, social support available to an expectant mother, and exposure to environmental factors such as atmospheric pollutants (concentrations of polycyclic aromatic hydrocarbons, carbon monoxide, etc.) must be assessed and verified. All of these are risk factors for the baby's health [2].

Preparation is necessary before pregnancy, in addition to the care that is carried out during pregnancy. Adequate antenatal follow-up reduces maternal, fetal, neonatal, and infant morbidity and mortality, up to five years of age [3][4][5][6]. Despite the benefits that adequate prenatal care has shown, many women still do not consider their prenatal care. Multiple factors and determinants have been identified, including a low socioeconomic and cultural level, domestic abuse, and excessive burden of their duties within the family that hinder prenatal care attendance [7][8][9]. Health strategies and policies must implement measures to encourage women to have adequate follow-up after a

pregnancy, to ensure good progress of a pregnancy, and to be able to detect any alteration to the normal course of early pregnancy, in order to establish appropriate socio-sanitary measures to minimize any impact on the health of a mother and fetus. This could reduce healthcare costs derived from maternal and child comorbidities and also increase the quality of life for a pregnant woman.

This prenatal care, including preconception care, is not standard for all women because it is not present in all healthcare systems worldwide. The type of follow-up depends on the health provider, the evolution of the pregnancy, and the sociodemographic characteristics of the woman. Antenatal care involves a series of periodic reviews that encompasses prevention, diagnosis, and treatment of those factors that can condition maternal and neonatal morbidity and mortality. There are different guidelines in each country, and even within the same country. For example, in Spain, despite the existence of a practical care guide from the Spanish Society of Gynecology and Obstetrics (SEGO) <sup>[10]</sup>, prenatal care varies among Spanish regions <sup>[11][12]</sup>. These guidelines are instruments that enable the monitoring to be carried out in a standardized way for each woman. The World Health Organization (WHO) has established several recommendations regarding routine prenatal care for all pregnant women. The purpose of this guide is to reflect and to answer the complex nature of the issues surrounding the practice of prenatal care. Furthermore, these guidelines are aimed at preventing the mortality and morbidity of a mother and fetus and prioritizing the well-being of a mother, in accordance with a human rights-based approach <sup>[13]</sup>. This guideline addresses various recommendations to be taken into account which include the following: nutritional interventions (food interventions, supplementation with micronutrients and vitamins); maternal evaluation (maternal anemia, asymptomatic bacteriuria, etc.); fetal evaluation (daily estimation of fetal movement, measurement of uterine height, etc.); precaution measures; and some interventions for common physiological symptoms such as leg cramps, nausea, vomiting, heartburn, low back pain, pelvic pain, constipation, varicose veins, and edema. Finally, these guidelines also contain information on specific interventions in health systems to improve the use and quality of prenatal care (perinatal card, midwifery continuity of care, etc.) <sup>[13]</sup>.

## 2. Nutritional Status of Pregnant Women

The WHO defines nutritional status as the interpretation of information obtained from biochemical, anthropometric, and/or clinical studies used to determine the nutritional status of individuals or populations. Assessment of nutritional status is essential because it allows us to make a diagnosis and, if necessary, to propose treatment. The international approved measure is the body mass index (BMI) (weight divided by height in meters squared), or the Quetelet index, in reference to the statistician who developed it. For pregnant women, according to the National Academy of Sciences, BMI is classified as follows <sup>[14]</sup>:

- Low weight, BMI < 19.8 Kg/m<sup>2</sup>;
- Normal, BMI 19.8–26 Kg/m<sup>2</sup>;
- Overweight, BMI 26.1–29 Kg/m<sup>2</sup>;
- Obesity, BMI > 29 Kg/m<sup>2</sup>.

This BMI classification does not coincide with that of the WHO for the general adult population, although the differences between them are minimal. Thus, for example, the WHO cut-off point for overweight in the adult

population is a BMI  $\geq 25$  Kg/m<sup>2</sup> [15].

The pregnancy weight gain curve, called Rosso and Mardones, is another resource used in Latin America to guide weight gain during pregnancy. It was designed as an instrument to evaluate the relationship between weight and height at each gestational age based on the perinatal result. The weight/height ratio is expressed as the percentage of the ideal or standard weight according to the BMI. The ideal weight is derived from the adequacy of weight for height in the tables developed for this purpose. The Rosso and Mardones defines categories of maternal nutritional status according to the mother's weight and height [16].

The nutritional status of a pregnant woman measured through BMI has been associated with different adverse maternal and neonatal outcomes. Nevertheless, it is important to note that the nutritional state of a mother influences offspring results, even before a woman becomes pregnant. Therefore, it is convenient to monitor preconception nutritional status and carry out necessary interventions so that a woman begins a pregnancy with an adequate nutritional status, preventing the possible appearance of maternal and neonatal conditions from the beginning.

Weight gain during pregnancy is another measure considered for assessing the nutritional status of a pregnant woman. This is a measure to assess the well-being of a pregnant woman and the fetus. When weight gain is insufficient or excessive, it represents a significant risk of certain maternal and fetal diseases, both in the short, medium, and long term [17]. For a well-nourished woman, normal weight gain by late pregnancy ranges from approximately 11 to 16 kg. Weight gain during pregnancy tends to be less, the higher the prepregnancy BMI, and also depends on whether it is a single or twin pregnancy. For a single gestation, the recommendations for weight gain, according to BMI, can be seen in Table 1 [10].

**Table 1.** Recommendations for weight gain during pregnancy, according to body mass index (BMI).

BMI Classification	Recommended Weight Gain for Single Gestation	Recommended Weight Gain for Twin Pregnancy
With a normal weight  (BMI: 18.5 and 24.9 kg/m <sup>2</sup> )	Between 11.5 and 16 kg	Between 16.8 and 24.5 kg
Overweight  (BMI: 25 and 29.9 kg/m <sup>2</sup> )	Between 7 and 12.5 kg	Between 14.1 and 22.7 kg
With obesity	Between 5 and 9 kg	Between 11 and 19.1 kg

Dietary evaluation and nutritional education of a pregnant woman should be routine practices incorporated into obstetric clinics as tools to improve health during pregnancy and puerperium. Accordingly, it is essential to know the preconception weight and height and monitor the BMI/gestational age according to the curve at each scheduled

consultation. Likewise, evaluation of dietary practices is highly advisable to detect harmful and inadvisable dietary habits that should be modified to improve the nutritional status of women and children [18].

### 3. Conclusions

The maternal diet before and during pregnancy plays a fundamental role in the prevention of certain diseases in a child during early life and also at older ages. The maternal diet has a direct association with the appearance of diseases during pregnancy, and also has an indirect effect by playing an important role in the development of diseases during pregnancy that are associated with subsequent childhood diseases.

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