

## The importance of Nutrology in pregnancy

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### Abstract

For many years, concern about nutrition during pregnancy was closely linked to the well-being of the fetus, mother and prevention of perinatal mortality. In 2010, the number of newborn deaths up to 4 weeks of life was four million worldwide, with an unequal distribution among developed and developing countries (GLASSMAN ET AL. 2010). Mortality in the neonatal period, which comprises the period between birth and 28 days of life of the newborn, is one of the best markers of the quality of care for pregnant women in the neonatal period.

Congenital malformations, prematurity, low birth weight, cancer and maternal complications related to childbirth appear in the neonatal mortality list. Although these causes are multifactorial in nature, all have in their genesis some potentially modifiable risk factor associated with maternal nutrition.

More recently, the concern with nutrition in pregnancy has gained an added chapter, which is the prevention of chronic diseases in the future of children (MATS, 2011). Between 2008 and 2013, epidemiologists met to compile the Lancet Series. The goal was to study the 178 million malnourished children under 5 years of age. Early in the studies, epidemiologists identified that 32 million malnourished children were born with intrauterine growth restriction. The number, besides being significant, brought concern about what the future of these children would look like in terms of growth, neuropsychomotor development, chronic diseases and the impact on human capital. Throughout the studies, it has been proven that the impact of malnutrition during pregnancy has an intimate correlation not only adverse events in the peripartum period, but with chronic degenerative diseases such as diabetes mellitus, systemic arterial hypertension, obesity and even cancer ( The next stage of epidemiologists was to identify a possible intervention window, where risk factors could be identified and corrected, in order to reverse the chronic damage that malnutrition irreversibly establishes in the physical and cognitive health of the child (MARCINIAK, 2017) This intervention period, known as the golden period, was given the name 1000 days.

The 1000 days, also known as the Golden Interval, is the period that runs from the first day of pregnancy to the two years of age. More recently, studies have spoken in 1100 days, extending this intervention window to 100 days before conception. The 1000 days not only include nutritional strategies, but these are certainly the ones with the greatest impact on long-term disease prevention. What the Lancet series advocate is that proper nutrition during pregnancy and during the first two years of life can not only impact the individual, but an entire society. GLASSMAN et al. (2010) published a projection that if nothing is done regarding the reduction of chronic degenerative diseases in Brazil, in 20 to 30 years public health spending will double. The Lancet series on malnutrition during pregnancy and childhood can prove that the improvement in the health of pregnant women and newborns brings social and economic benefits, which could change the course of society's rampant evolution to chronic degenerative disease. Therefore, it is a great opportunity for the individual and society and a great responsibility for health teams to establish adequate nutrition in the thousand days.

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Given the great importance that nutrition in pregnancy has in determining a healthy childhood and adult life, it is to be expected that this is a subject of fundamental importance in prenatal care. However, a study conducted in the state of Rio de Janeiro found failures in nutritional follow-up throughout prenatal care, reflecting the little importance given to nutrition during pregnancy. In this study, 90.7% of the pregnant women's portfolios had no record on the BMI graph per week of gestation. Pre-gestational weight and height measured were recorded in 65.9% and 57.7% of prenatal cards, respectively (NIQUINI, 2012). These are incompatible data with the objective of reversing causes of prenatal mortality as well as reversing chronic degenerative disease. It is of great importance to reverse the current situation in Brazil, which has an expressive number of maternal malnutrition, anemia, vitamin A and micronutrient deficiency, hypertensive syndromes and gestational diabetes.

The first step to reverse the morbidity and mortality of mother and baby, as well as to decrease the illness of the population is to give adequate preconception care. This chapter aims to address these prenatal nutritional care, as well as each nutritional aspect associated with the prevention of chronic degenerative disease.

**Keywords:** Nutrological; Pregnancy; Nutrition; Hormonal; Psychological

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## 1. The Nutrological Consultation in Pregnancy

The gestational period is marked by physiological, metabolic, hormonal and psychological changes. These changes require specific nutritional needs different from the pre-pregnancy period. A classic example is gestational diabetes. In this metabolic change, the pregnant woman will go through diet and even medications to which she had not been exposed until then.

Nutritional guidance is as important as the other orientations in the neonatal period. It aims to establish the nutritional status of pregnant women throughout the gestational period, identify risk factors associated with nutritional status, make preventions and corrections of nutritional disorders already established

One of the best indicators of prognosis at birth is access to prenatal care, having as a level of evidence grade B of recommendation. With this information, the Ministry of Health has invested in improving prenatal care, compiling technical manuals (MARCINIÁK, 2017)

Worldwide, who indicates a number of prenatal consultations equal to or greater than six consultations. But studies show that if there is a smaller number of consultations in low-risk pregnant women and these consultations are excellent, there is no increase in adverse prognoses in childbirth (NOTEBOOKS DE PRIMARY CARE, 2013).

To be in accordance with who's indications, the Brazilian Ministry of Health called for at least six prenatal consultations, one in the first trimester, two in the second trimester and three in the third trimester.

In prenatal consultations, there is no indication of nutritional consultation with specific professionals of nutrition or nutrition, and often nutritional guidance will be made by obstetricians or general practitioners. In the vast majority of cases, the pregnant woman will only be referred to a nutritionist if there is nutritional comorbidity that puts the pregnancy at risk. Therefore, the knowledge of nutritional demands during pregnancy by professionals who attend prenatal care is not only due to the need to refer to the most severe cases, but also to the good care of pregnant women in general.

In order to find out if the nutrition theme was being addressed in prenatal consultations, the study by Santos et al analyzed the Nascer program in the city of Ribeirão Preto SP, detecting that 60.43% of pregnant women were not oriented regarding nutritional aspects (SANTOS, 2006). Therefore, it is necessary that all general professionals understand nutrition during pregnancy and to perform the consultation, the nutrological evaluation.

Nutrological evaluation should begin with general anamnesis. Anamnesis (from Greek, ana bring again and mnesis, memory) is the part of the consultation that focuses on knowing the history of the pregnant woman.

The anamnesis begins in the identification of the pregnant woman, through information such as age, color, naturalness and origin, education, occupation, marital status, income and religion. In this first part of the anamnesis, risk factors such as advanced age, low schooling and income can be traced, as well as identify food prohibitions determined by culture and religions.

It follows the identification, the search for family history. In this topic it is necessary to know of comorbidities present in the family, from hereditary to malformations and genetic syndromes. Unlike the case history of other groups, in the case of pregnant women, it is necessary to know the family history of the partner.

In personal history, the past and current comorbidities of the pregnant woman are investigated. In this topic, past and current clinical diseases, surgical procedures, hospitalizations, blood transfusions and how the complications and outcomes were in the interest during them. If the pregnant woman has current disease, the medications used to treat the disease are investigated. Some medications may bring nutritional risk, whether induced by gastrointestinal alterations, or competing for absorption site.

In the personal history, in prenatal care, it is necessary to investigate the obstetric past. In the obstetric past, it is necessary to investigate how many times he had, whether there was occurrence of abortions or stillbirths, presence of comorbidities (gestational diabetes mellitus, hypertension, preeclampsia among others), use of medications and supplementations, even verifying whether it was adherent to prescribed supplementations), eating habits and pattern of weight gain, type of delivery and complications in and childbirth postpartum, premature births and births of PIGs and GIGs (small for gestational age and large for gestational age respectively).

Once the general anamnesis is elucidated, the nutrological anamnesis should be focused. In the first consultation, diseases associated with dietary restrictions such as celiac disease and food allergies (DURVAL, 2015) should be investigated and whether such diseases are being well managed or if patients are already at nutritional risk due to inadequate restrictions. Also investigate whether pregnancy brought functional changes in the gastrointestinal tract such as constipation, heartburn, flatulence and how such changes impact the day-to-day life of the pregnant woman. Regarding micronutrient deficiency, whether the pregnant woman already had a previous history of deficiency and how she had been managed. If there are no diseases and alterations detected in this first part of the nutrological anamnesis, the next step will be to see the pregnant woman's habits. It should be investigated in the habits the use of licit drugs (including smoking and alcohol that has great impact on the fetus), exercise habits, hydration and eating habits. In the nutrological anamnesis, for the evaluation of feeding pattern is of great help the 3-day food recall (DURVAL, 2015), where the pregnant woman will write down each food ingested. The dietary recall allows identifying how many meals the pregnant woman makes per day, what preferences and dietary aversions, what distribution in frequency and volume of each macro and micronutrient, as well as identifying cultural eating habits and eating disorders patterns.

Once the anamnesis is closed, the next step is to carry out the physical examination. To perform the physical examination and classify the pregnant woman regarding anthropometry, it is necessary to know the Gestational Age that this pregnant woman is on the day of the consultation. Gestational age is the number of weeks elattered since the date of the last menstruation (DUM). If the pregnant woman does not know how to inform this date, the calculation will be done based on obstetric ultrasound (DIETZ, 2015).

The nutrological physical examination, different from the general physical examination, is aimed at looking for signs of dehydration, hypovitaminosis, edema, abdominal distension and, predominantly, an excellent anthropometry.

Among the anthropometric measurements, the one with the greatest impact on pregnancy is weight, which is directly linked to the metabolic programming process. Weight in pregnancy is best monitored through the Body Mass Index (BMI), which is the index most recommended by the WHO and the Ministry of Health. The classification of nutritional status as well as the recommended weight gain, can be better understood in table 1 (Champion, 2020;).

**Table 1** Variation in weight gain in BMI-based pregnancy

Pre-pregnancy BMI (kg/m <sup>2</sup> )	Classification	Variation in Weight Gain (kg) in pregnancy
Up to 18.5	Low Weight	12.5 to 18
18.6 to 25	Normal Weight	11.5 to 16
25.1 to 30	Overweight	7 to 11.5
Over 30.1	Obesity	5 to 9

IOM Source, 2009

## 2. Conclusion

In all nutrological consultations anthropometric measurements should be evaluated and weight gain should be monitored. Orientations should be intensified if the pregnant woman is already overweight and obese prior to pregnancy.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

All authors contributed to the realization of this review article.

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