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**DELL'ALIMENTAZIONE E NUTRIZIONE UMANA**

**THE EVALUATION OF NUTRITIONAL STATUS**  
**AND GLYCAEMIC CONTROL OF PREGNANT**  
**WOMEN IN THE REGION OF RUKWA,**  
**TANZANIA**

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## ABSTRACT

A future mother needs to have an adequate nutrition in order to maintain an optimal health state and to, concurrently, allow the fetal tissue to form and develop in the best way. A correct nutrition represents one of the fundamental assumptions for the normal evolution of the pregnancy, growth of the fetus and prevention of pathologies in the newborn. Nevertheless, such principles are frequently disobeyed in the developing countries, because of poverty, lack of information and difficult access to health facilities. The research of specific pathologies, such as Diabetes and sexually transmitted diseases, is carried out only in limited contexts and there is no sufficient information on how to prevent them and which consequences they would have on the health status.

This problem was also detected in the present study, carried out in Tanzania in August 2018. More specifically, in the territory of Mvimwa, an area of rural villages 60 km away from Sumbawanga, in the Rukwa region.

Over the past decade, the prevalence of Diabetes has risen faster in low and middle-income countries in respect to high-income countries. Hence, the need to assess the state of health and the glycaemic control of pregnant women has been enhanced. As gestational time progresses, the placenta volume increases. There is an increase in the levels of hormones such as estrogen, progesterone, cortisol and placental lactogen in the maternal circulation, accompanied by an increase in insulin resistance. These physiological changes expose the pregnant woman to the risk of developing Gestational Diabetes that, if not recognized and treated over time, can develop high morbidity in the mother, the fetus and then the newborn.

In the light of all this, the main purpose of this study is the assessment of the nutritional status of pregnant women and the prevalence of Gestational Diabetes or Impaired Glucose Tolerance, without a real diagnosis of Diabetes. The differences between the nutritional status and the alterations in the metabolism of glucose was assessed among the women who attended the St. Cammilus' Dispensary of Mvimwa Abbey, the Kate's Dispensary and those who came from the six nearest villages in the rural zone.

A total of 128 patients were screened; 87 were examined in the dispensaries and 41 in the neighbouring villages. Epidemiological information was collected for each

woman. Hence, a mean age of 26.02 has been evaluated, a median of the 7<sup>th</sup> month of pregnancy, an average of 3 children per woman and the 13% has declared to have had one or more abortions in previous pregnancies.

The assessment of the nutritional status was performed by collecting data on weight, height, Body Mass Index (BMI), waist circumference, wrist circumference and blood pressure. For the evaluation of the glycaemic control, it is important to specify that these are simple measurements carried out with a glucometer, since the most recognized and valid method for the screening of Gestational Diabetes was not available on site: the Oral Glucose Tolerance Test (OGTT) with 75 g. of glucose.

The secondary purpose of the study is to conduct a food survey on the two examined groups and to evaluate the comorbidity of diseases such as HIV, Syphilis and Malaria.

The food investigation was carried out directly through oral questions in the local language. The women were asked to talk about their eating habits through a "Recall 24 h".

Lastly, only the patients who attended the dispensary were tested for HIV, Syphilis and Malaria. In case of positive results, the staff educated the patient, increasing their awareness and offering therapy, that had to be started as soon as possible, to reduce the possibility of a mother-child transmission.

Considering all the results, it can be said that the evaluation of the nutritional status of the 128 examined women did not show an alarming state of malnutrition. In fact, the values of the anthropometric measurements were within the normal range. However, the group of women analyzed in the villages showed less attention to self-care than the group of women analyzed in the dispensaries.

The dietary habits of the whole sample have shown that these patients do not follow a healthy and appropriate diet for the growth of their child. The number of daily meals, the amount of water they drink and the little variety of foods they eat, will ultimately lead to a state of malnutrition. This will affect maternal and fetal health.

Based on data, it was possible to give an overall picture of the prevalence of hypertension in the whole sample: the percentage of hypertensive patients belonging to both groups was 13.3%.

The analysis of the glycaemic values of the whole sample showed that 4 women had a fasting plasma glucose greater than 126 mg / dL, therefore affected by Gestational

Diabetes Mellitus. In addition, 38 women had a pre-diabetes condition because they were diagnosed with an Impaired Fasting Glucose (IFG) or Impaired Glucose Tolerance (IGT).

The prevalence of estimated Gestational Diabetes is therefore of 3.13% on the whole sample: considering that the African prevalence of the pathology is of 0-14%, the prevalence of the study is placed, with an average index, within the range. Furthermore, 29.7% of the whole sample, being in a pre-diabetes condition, shows that there is a potential risk of developing diabetes in about 1/3 of the examined patients. On the other hand, 12.5% of the whole sample, at the time of the visit, was in a hypoglycemic condition.

The food investigations have verified the presence of a diet lacking in proteins of high biological value, vitamins and minerals, essential for the correct development of the fetus and the well-being of the mother. Nutrition in Tanzania is based on a caloric income that is wholly derived from carbohydrates. In addition, water consumption is extremely limited: about 33% of the entire sample drinks less than 500 mL of water per day.

Lastly, the prevalence of HIV is of 4.6%; this value does not differ from that given by the rate of prevalence of HIV / AIDS of adults in Tanzania, which is of 5%. There was a prevalence of 2.3% regarding Syphilis, whilst, instead, no Malaria case was found. Disease-wise, important results have been achieved in the last few years: incidence and mortality have been reduced and access to treatment, for the main diseases, has been enhanced; but a large part of the African population continues to suffer disproportionately, from the other continents, of premature deaths and preventable disabilities.

In conclusion, considering all the researches which have been carried out and the obtained results, it is essential to continue to study the factors that are leading to an increase of the cases of Gestational Diabetes in the developing countries.

Food education projects are crucial for both the dispensary staff and the population. The goal is to improve the understanding of a healthy and balanced lifestyle, based on a proper diet that does not change the local habits, since it would be very complicated in terms of traditions and tastes.