

Nutritional status of high-risk IVF patients: impact on obstetrical complications

A prospective cohort study at Brussels IVF, Belgium

Project team: Dr. Margot Moeykens, Prof. Dr. Shari Mackens, Prof. Dr.

Elisabeth De Waele, Janne Geers,

Contact: Margot Moeykens, University hospital Brussels, Laarbeeklaan 103
1090 Jette.

Description of the initiative

The **nutritional status in pregnant women** is of major importance to optimize the chances of a **healthy** developing **foetus** and an **uncomplicated** course of **pregnancy**. Malnutrition during the preconceptional and pregnancy state has been associated with intra-uterine death, gestational diabetes, preterm labour, hypertensive disorders such as pre-eclampsia and fetal growth restriction. The International Federation of Gynaecology and Obstetrics (FIGO), has been raising awareness amongst gynaecologists, by creating a nutrition checklist to identify patients at risk for maternal malnutrition. However, in clinic, nutritional status in pregnant women is rarely evaluated, nor are the women educated on how it can influence their chances of a healthy pregnancy. At **Brussels IVF**, we do recognise the risks of malnutrition and have, in collaboration with the **department of clinical nutrition**, created care paths to optimise the nutritional status of our, hopefully, soon to be pregnant women. Unfortunately, we know that the **rate of pregnancy complications**, in our patients, **pregnant after IVF**, remains extremely **high**. The goal of this project is to identify new nutritional parameters, associated with adverse pregnancy outcomes in high-risk IVF patients, so in the future more screening tools become available to identify these patients in need for more nutritional and obstetrical follow-up.

Planned activities & deliverables

During this pilot study, we will include a total of 20 IVF patients belonging to one of the two known high-risk groups for developing pregnancy complications, namely patients with **polycystic ovary syndrome (PCOS)** and **oocyte recipients**. Their nutritional status will be evaluated by a **nutritional diary**, **indirect calorimetry (IC)**, **bioelectric impedance analysis (BIA)** scan and **whole body MRI** at different time points, more particularly, **preconceptionally, at 12, 20 and 36 weeks' of gestation**. We will note the following pregnancy complications: miscarriage, gestational diabetes, hypertensive disorders including preeclampsia, fetal growth restriction and intra-uterine death. We will analyse how the nutritional and metabolic parameters shift from pre-pregnancy until the end of pregnancy and which specific deviating results associate with an increased risk of an unhealthy pregnancy. Patients inclusion will take 4 weeks (+/- 5 patient per week). Time to pregnancy will depend per patient, but from our experience will vary between 1 and 9 months. Most patients will have delivered a liveborn 12 to 18 months after inclusion.

Resources & enablers

The grant will be used for the nutritional assessment of 20 patients and the personnel cost of the staff from the clinical nutritional department. We are convinced that this extremely interesting high-risk population offers an unique opportunity of studying nutritional status and body composition in ART patients at high-risk

for pregnancy complications and this also preconceptionally. I believe that it will demonstrate the need for adequate nutritional guidance before and during pregnancy.

Examination	Price	T0: preconceptional	T1: 12 weeks'	T2: 20 weeks	T3: 36 weeks
BIA	€ 29,59	BIA	BIA	BIA	BIA
IC	€ 83,96	IC	IC	IC	IC
Whole body MRI	€ 150,00	Whole body MRI	Whole body MRI	Whole body MRI	Whole body MRI
Nutritional diary	€ 20,80	Nutritional diary	Nutritional diary	Nutritional diary	Nutritional diary
Interpretation results	€ 25,70	Interpretation results	Interpretation results	Interpretation results	Interpretation results
Intake consultation	€ 20,83	Intake consultation			
Physical tests	€ 26,00	Physical test			
		€ 356,88	€ 310,05	€ 310,05	€ 310,05
Total cost per patient	€ 1.287,03				
Total cost for 20 patient	€ 25.740,60				
Cost nutritional staff	€ 4.200,00				

Results/outcomes & expected impact

With this innovative pilot study, we want to identify new nutritional parameters associated with pregnancy complications, in high-risk IVF patients. This study will be the first to follow-up the evolution of the woman's nutritional and metabolic status, with all the above mentioned, cutting edge, examinations, starting before pregnancy until 36 weeks' gestation. With these results we hope to demonstrate the need for more preconceptional nutritional screening, as well as adequate nutritional guidance during pregnancy to optimise the chances of a healthy pregnancy. We are convinced that nutritional and metabolic parameters are understudied in pregnant women and new (inter)national guidelines should become available. Although we realise we are working with a specific patient population, the great advantages of the fertility setting cannot be underestimated. It offers the unique opportunity to identify nutritional/metabolic parameters prior to pregnancy (preconceptionally), where in other setting this is not feasible. On top of that, these patients show much higher incidences of almost all pregnancy complications especially of gestational diabetes and hypertensive disorders. We hope to be able to contribute to optimal nutritional health in high-risk pregnant women.



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