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Dietary glycemic index and load and semen quality: A cross-sectional and longitudinal analysis within the FERTINUT trial

Final Master's Project

Nutrition and Metabolism Master's Degree

Javier Mateu Fabregat

Supervisors: Mònica Bulló, PhD and Christopher Papandreou, PhD

Nutrition and Metabolic Health Research Group (NUMEH)

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Abstract

Background: Infertility is a global health issue and emerging evidence suggests the importance of nutrients on fertility outcomes. However, the role of glycemic index (GI) and glycemic load (GL) in semen quality is unknown.

Objective: We aimed to investigate the cross-sectional and prospective (14-week follow-up) associations of GI and GL with semen quality parameters in a cohort of healthy young men.

Methods: A total of 106 and 98 men, aged 18-35 years, from the FERTINUT trial were included in the cross-sectional and prospective analyses, respectively. Dietary intake was estimated through a 3-day dietary record and semen quality was assessed based on seminogram parameters such as pH, volume, total sperm count, sperm concentration, vitality, motility and morphology. Multivariable linear regression analysis using Least Absolute Shrinkage and Selection Operator (LASSO) were performed to examine the associations of GI and GL with seminogram parameters.

Results: GI was associated with increases in pH, vitality, immotile sperm or abnormal midpiece and decreases in total sperm count and motility. GL was positively associated with changes in vitality and total sperm count. In the cross-sectional analysis, both GI and GL showed positive associations with total sperm count, sperm concentration and total motility.

Conclusions: Our findings suggest that GI may predict adverse changes in several seminogram parameters among healthy young men. Larger prospective studies are needed to validate these findings and gain a deeper understanding of the role of carbohydrates in sperm quality and fertility.

Key words

Glycemic index, glycemic load, carbohydrates, semen quality, fertility