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Gender-specific effects of 3-month nutrition intervention on lipid profiles and insulin sensitivity

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Dyslipidemia and insulin resistance are pivotal in diabetes mellitus and cardiovascular disease (CVD) pathogenesis, underscoring the necessity for lifestyle interventions⁽¹⁾. Previous research has highlighted the efficacy of dietary modifications in improving metabolic parameters and reducing CVD risk^(2,3). However, understanding the gender-specific responses to such interventions remains underexplored. This study aims to investigate the gender-specific effects of a 3-month nutrition intervention, aimed at improving lipid profiles and insulin sensitivity in patients with dyslipidemia and insulin resistance.

107 patients (pts), 53 men (49,5%), 54 women (50,5%), mean age 44,6 ± 11,3, mean BMI 33,1 ± 6,8, with dyslipidemia and insulin resistance were studied, 58 pts (54,2%) were with obesity. During the intervention, participants were provided with a dietary plan consisting of 3 meals, each of which contained vegetables (starchy and non-starchy), carbohydrates (whole grains, fruits, berries), proteins (poultry, fish, seafood, eggs, legumes, dairy products) and fats (olive oil, flax seeds, tree nuts). Pts were restricted on red and processed meat, butter, milk, trans fat, sugar, white flour products, and alcohol. The dietary intervention lasted 12 weeks, during which pts maintained self-reported diet records to monitor their dietary intake. No pharmaceutical interventions were employed throughout this duration. Statistical analysis was based on using paired t-test with assessment of the dynamics of clinical indicators with 95% CI and calculation of the standardized effect size based on mean comparison.

Among women after 12 weeks the mean reduction in serum low-density lipoprotein cholesterol (LDL-C) was -0.79 mmol/L (from 4.16 ± 0.85 to 3.37 ± 0.72) or -18,9%; triglycerides -0.33 mmol/L (from 1.51 ± 0.77 to 1.18 ± 0.45) or -21,85%; Homeostatic Model Assessment for Insulin Resistance (HOMA-IR) index decreased on -2,23 or -43,47% (from 5.13 ± 4.59 to 2.9 ± 2.56), insulin level dropped by 35,25% (from 17.87 ± 12.76 to 11.57 ± 7.89).

Among men the reduction in values was the following: for LDL-C -0,85 mmol/L or -18,44% (from 4.16 ± 1.08 to 3.76 ± 0.88); for triglycerides -0,68 mmol/L or 33,66% (from 2.02 ± 1.07 to 1.34 ± 0.52); for HOMA-IR index -2,03 or -38,01% (from 5.34 ± 4.34 to 3.31 ± 2.74), for insulin -8,17 or -39,78% (from 20.54 ± 15.26 to 12.37 ± 8.66).

The dynamics for these indicators are statistically significant ($p < 0.05$).

Dietary intervention led to significant reductions in serum LDL-C, triglycerides, HOMA-IR index, and insulin levels among both women and men, highlighting the effectiveness of dietary modification in improving lipid profiles and insulin sensitivity.

References

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