Assessing dietary clusters among candidates for metabolic-bariatric surgery and their association with metabolic status

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Candidates for metabolic-bariatric surgery (MBS) exhibit distinct nutritional profiles, and clustering their macronutrient and micronutrient intakes may reveal inter-individual differences. This study aimed to: (1) identify the macro- and micro- nutrient intake patterns among candidates for MBS; and (2) assess the associations between these patterns and metabolic status (body fat %, HbA1c, lipid profile, granulocytes (GR), international normalised ratio, C- Reactive Proteins). Three-day food records collected using Keenoa, a dietary assessment application and metabolic markers from a blood draw were obtained up to three months pre-MBS from EMBRACE, a study conducted in Quebec, Canada. A total of 30 participants (M_{age}=45.50 ± 9.8 years; M_{BMI} =46.03 ± 7.61 kg/m^2 were included in the study. Three dietary clusters were identified using the FASTCLUS procedure (SAS): high sugar/high caloric diet (Cluster 1, n=6); high protein/high cholesterol diet (Cluster 2, n=13); and low fibre/low saturated fat diet (Cluster 3, n=11). Analyses demonstrated significantly greater low-density lipoproteins (LDL) (5.28 ± 0.71 mmol/L) and GR (5.64 ± 0.21 10^9/L) in Cluster 1 relative to Cluster 2 (LDL: 2.38 ± 0.28 mmol/L; p=.013), (GR: 4.71 ± 0.09 10^9/L; p=.003) and Cluster 3 (LDL: 1.76 ± 0.44 mmol/L; p=.010), (GR: 5.01 ± 0.15 10^9/L; p=.015). These findings highlight the variability in nutrient intake patterns and metabolic status among MBS candidates, suggesting potential for individualized profiling. Such insights could inform tailored nutritional and medical interventions, advancing precision obesity care. Future research should compare these clusters to controls or post-surgery profiles.

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