

**Title:** Heterogeneity in changes in dietary clusters 6 months following metabolic bariatric surgery: Associations with cardiometabolic status

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**Background:** Individuals undergoing metabolic bariatric surgery (MBS) present with unique, heterogeneous nutritional and cardiometabolic profiles. However, the clustering of macro- and micronutrient consumption and their relationship with metabolic health remain unclear. Identifying such patterns could help personalise nutritional care before and after surgery.

**Objectives:** This study aimed to: (1) identify dietary clusters based on changes in macro- and micro-nutrient intakes before and after MBS; and (2) examine their associations with cardiometabolic indicators (waist-to-height ratio, lipid profile, inflammatory markers).

**Methods:** Data were collected 3 months pre- and 6 months post-MBS at the Montreal Sacred Heart Hospital (Canada). Three-days food diary records (using a mobile application: Keenoa), anthropometric measures, body composition, and cardiometabolic markers were obtained. Dietary clusters were derived using the FASTCLUS procedure based on changes ( $\Delta$ ) in nutrient intakes from pre- to post-MBS, and associations with cardiometabolic outcomes were assessed using ANCOVA.

**Results:** Patients (N = 23) had a mean age of  $51 \pm 10.4$  years and a mean BMI of  $46.3 \pm 7.7$  kg/m<sup>2</sup>. Two dietary clusters were identified. Cluster 1 showed decreases in macronutrient and micronutrient intakes, sugars, fatty acids, fiber, and energy, whereas Cluster 2 showed increases in protein, fat, and micronutrient intakes from pre to post MBS. No significant differences in cardiometabolic markers were observed between clusters.

**Conclusion:** These dietary clusters reflect substantial nutritional heterogeneity and warrant further investigation in larger cohorts to better understand their long-term impacts.

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