# DIETARY PATTERNS IDENTIFIED THROUGH GAUSSIAN GRAPHICAL MODELS DIFFER BY SOCIAL DEPRIVATION SCORES AMONG ADULTS IN THE NUTRIQUÉBEC COHORT

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Introduction: Humans consume complex, multidimensional dietary patterns that vary across time and life context. Although it is well-established that inequities in dietary intake exist across a range of sociodemographic characteristics, studies rarely consider how these inequities may result in differences in intake across the total, multidimensional dietary pattern. The objective of this study was to examine how dietary patterns differ across a gradient of social deprivation, which reflects poor social network at the neighborhood level.

Methods: Dietary intake was assessed in the NutriQuébec Cohort using the average of up to three baseline 24-hour recalls per participant (n=4694). Social deprivation was assessed using the Institut National de Santé Publique du Québec (INSPQ) Social Deprivation Index (SDI) 2021. Gaussian graphical models identified conditional relationships among variables, allowing insights into the internal structure of dietary patterns. Gaussian graphical models were applied to compare dietary pattern networks among low (quintile 1) and high (quintile 5) of the SDI. Networks included the amount consumed of 20 log-transformed food groups (reference amounts), with the strength of conditional relationships between food groups indicated by edge weights. Model accuracy and validity were assessed using 10-fold cross-validation.

Results: Positive linear relationships were observed in both Quintiles 1 and 5 of the SDI between fruits and vegetables (0.18, 0.16 respectively), whole grains and nuts (0.17, 0.20 respectively), and negative linear relationships were observed among whole grains and refined grains (-0.20, -0.22 respectively). Intake of meats and fat were positively associated (0.13) in quintile 1 but not quintile 5 of the SDI. Inversely, intake of refined grains and dairy (0.18) and eggs and fat (0.17) were positively associated in quintile 5 but not quintile 1 of the SDI.

Conclusion: Gaussian graphical models revealed distinct dietary patterns among individuals in living in neighborhoods characterized as low or high SDI. Given known compromises in dietary intake for single foods, nutrients, and summary diet quality scores, this approach to explore the internal structure of dietary patterns provides added insights into potential disparities in dietary intake. Using a range of approaches to explore dietary patterns extends our understanding of these patterns and how they differ by indicators of inequity.