Greater Perceived Distance to Fresh Food Retailers and Physical Activity Resources is Associated With Increased Risk of Metabolic Syndrome in a Population-Based Sample


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Aim: To compare objectively measured and perceived accessibility of fresh food retailers and physical activity resources, and to evaluate their respective associations with a measured cardiometabolic outcome, defined as metabolic syndrome (MetS).

Method: Cross-sectional data from a randomly selected sample of adults originally recruited from the north-west region of Adelaide, Australia, were analysed (n=1,204). MetS was derived from clinical measurements and defined using the IDF criteria. Participants reported perceived distance from their residence to the closest fresh food retailer (supermarket, greengrocer), and physical activity resource (e.g., sports field). Objective distances from participant residences to the closest fresh food and physical activity resources were obtained from retail and property cadastre databases, respectively. Agreement between objectively assessed and perceived environmental attributes was assessed using weighted kappa. Associations were evaluated using multilevel logistic regression models adjusted for age, sex, income, and education, and area-level socioeconomic status.

Results: Agreement was poor between objective and perceived accessibility measures for supermarkets (kappa=0.09), greengrocers (kappa=0.04), and physical activity resources (kappa=0.10). Metabolic syndrome was associated with both objectively measured (OR=1.17, 95%CI 1.02-1.36) and perceived (OR=1.36, 95%CI 1.12-1.66) greater distance to the closest supermarket, and perceived greater distance to the closest greengrocer (OR=1.23, 95%CI 1.02-1.48) and physical activity resource (OR=1.25, 95%CI 1.01-1.54).

Conclusion: Perceptions of local fresh food retailer and physical activity resource accessibility demonstrated superior predictive ability in relation to metabolic syndrome over objective measures. Environmental strategies aimed at improving population health might consider targeting residents’ perceptions of local-area resource accessibility, to enhance the effectiveness of such interventions.