

# Exploratory Study: High BMI Linked to Proximity to Convenience Stores

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(PhysOrg.com) -- Researchers at the University at Buffalo conducting a neighborhood-scaled exploratory study that tested the association between the food environment, the built environment and women's body mass index (BMI) have found that women with homes closer to a supermarket, relative to a convenience store, had lower BMIs, and that the greater the number of restaurants within a five minute walk of a woman's home, the higher her BMI.

The study, "Food Environment, Built Environment and Women's BMI: Evidence from Erie County, New York," involved 172 participants and was published in the April issue of the *Journal of Planning Education and Research*. It was led by Samina Raja, PhD, UB professor of urban and regional planning.

The study team comprised several UB researchers: Li Yin, PhD, assistant professor of urban and regional planning; James Roemmich, PhD, associate professor of pediatrics; Leonard Epstein, PhD, professor of pediatrics; Changxing Ma, PhD, assistant professor of biostatistics; and graduate students Pavan Yadav and Alex Brian Ticoalu.

"In particular, three findings are significant," says Raja.

"First, a greater number of restaurants within a five-minute walk of a subject's house was associated with a greater BMI, holding other factors constant," she says.

"Second," she says, "on average, women who live within relative proximity to supermarkets and grocery stores (as opposed to convenience stores) tend to have lower BMIs.

"Third, and perhaps most important," Raja says, "the interaction of the food environment and the built environment in a neighborhood carries significant consequences for obesity. For example, a diverse land-use mix, while beneficial for promoting [physical activity](#), is tied to a net increase in BMI when that land is dominated by restaurants."

She says future research on the built environment and health must take into account the role of the food environment on women's health, and the study offers suggestions for how food environments may be improved using planning strategies.

Raja is a nationally regarded community-based scholar in the fields of food security planning and community health whose work supports and is supported by UB's Civic Engagement and Public Policy research initiative.

She points out that more than one-third of U.S. adults were reported to be obese in 2006, with the prevalence of obesity slightly greater among women than men.

"The prevalence of obesity is a significant public health concern because it places individuals at a risk for a variety of diseases," she says, "and the role of environmental factors in contributing to obesity has received a lot of attention. We have attempted here to explain the paradox of high BMI rates among women living in highly walkable inner city neighborhoods.

Raja says the study has several limitations, among them, the fact that the researchers did not know where their subjects shopped for food, only

what outlets were closest geographically. They also were not able to classify restaurants based on their quality -- fast-food and sit-down restaurants were treated as a single category, even though they know that quality varies widely across different types of restaurants.

"The study raises several questions to be addressed in future research," she says, "and suggests that innovative research designs will be necessary to develop greater evidence of causality -- perhaps longitudinal studies that look at how moving one's residence (thus changing exposure to a particular food, food type or built environment) affects physical activity, eating behavior and health outcomes."

The study identifies planning strategies and tools available to improve community food and built environments to support healthy eating behavior.

"Comprehensive plans, regulatory mechanisms and financial incentives can be used individually or in concert to improve food environments," the study says, and cites recent efforts in Madison and Dane County, Wis.; Marin County, Calif.; Harrison County, Miss.; special regulations adopted in New York City that offer zoning incentives (e.g. allowing denser development and reduction in parking requirements) for development projects that dedicate a greater store floor area to fresh foods in underserved neighborhoods; and Pennsylvania's Fresh [Food Financing Initiative](#).

Provided by University at Buffalo

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