MedicalXpress

Urban design influences level of physical activity in Chinese cities

February 10 2015

Chinese cities are different from many Western cities in relation to urban design, and far more densely populated. But a new study by New York University and East China Normal University researchers has found that the design of the built environment influences how much walking and bicycling people do in Chinese cities where obesity and chronic diseases are at highly elevated levels and still rising.

"While not surprising," write the authors in their study published in the journal *Preventive Medicine*, "this finding is important, as it demonstrates that the association between the design of the built environment and walking, which has been found to be linked in research in Western countries, also holds true in China."

Entitled "Walking, obesity, and urban design in Chinese neighborhoods," the study was authored by Mariela Alfonzo and Kristen Day of NYU Polytechnic School of Engineering, Zhan Guo of NYU's Robert F. Wagner Graduate School of Public Service, and Lin Lin of East China Normal University. Its principal finding, the researchers write, is "part of emerging evidence that will be of critical importance to persuade local government officials and developers of the value of pursuing more walkable urban development patterns."

Reflecting on China's high rates of obesity and chronic diseases, the researchers set out to explore the impact of the built environment on physical activity in six densely populated neighborhoods in Shanghai and Hangzhou. The chosen communities encompassed urban core, inner-

suburban, and outer-suburban areas. Each was inventoried for ease of walking and bicycling, inclusive of such features as sidewalks, street trees, benches, street widths, and curb cuts. Also, the communities were audited for barriers to pedestrians and bicyclists, such as vendors and parked cars obstructing sidewalks, visible air pollution, bicycle lane hindrances, and overhead pedestrian bridges, which require greater exertion to use to cross the street.

Four hundred and fifty-five Shanghai residents and 615 Hangzhou residents were surveyed for the study in central public spaces in order to assess rates of walking and bicycling for travel and recreation, and for health outcomes, including Body Mass Index (BMI), demographic information, and environmental perceptions. The higher the neighborhood ranked overall in the "State of Place Index" - a method of categorizing communities' place-quality and walkability based on such urban design characteristics as density, parks and public space, personal safety, and pedestrian infrastructure and amenities (the index encompasses 11 different dimensions in all) - the greater were the levels of walking and bicycling for commuting and recreation that were seen.

According to the study, income levels played a role in how much a respondent walked or bicycled, but not in a predictable way: Both higher and lower income respondents were more likely to have lower BMI, compared to middle income respondents, who were more likely to live in suburban neighborhoods that have auto-oriented transportation and a lack of pedestrian amenities. Put another way, middle-income respondents were less likely to utilize active-travel options, such as walking and bicycling, as compared with both high- and low- income respondents. Separately, many of those who perceived their neighborhoods as unsuitable for walking actually walked more; it is likely that their alternatives to walking were limited, which presents a social-equity issue.

While the researchers did not examine the food environment, their study recommends that food intake be explored by other researchers in the future to shed further light on the link between income, obesity and walking in Chinese cities. For their own part, the authors plan to follow up their study by examining the impact that each of the 11 individual dimensions that make up the "State of Place Index" has on physical activity centered in Shanghai and Hangzhou.

Provided by New York University