

Neighborhood Walkability and its Potential Associations with Residents' Walking Habits

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Walkability is a concept that embraces various aspects of physical neighborhood environments that may support and promote walking in a neighborhood. Walkable neighborhoods are expected to improve residents' physical activity level and thus health because such environments may be able to implicitly encourage residents to choose walking over driving as a daily transportation mode. While research on walkability originated in western countries, where obesity and lifestyle-related illnesses has been a longstanding public health problem, such research in Japan is also useful and necessary because improving healthy life expectancy among the elderly in an undemanding way is critical in our super-aging society. The concept of walkability is also closely related to that of the compact city, which is considered to be a promising form of sustainable cities in the field of urban planning, as walking is expected to be a major transportation mode in such cities.

This research therefore aims to investigate potential associations between neighborhood walkability and residents' walking habits with specific consideration to characteristics of Japanese cities. Here, we consider two types of walking, namely walking for transportation and walking for leisure, separately because they may relate to neighborhood walkability in different ways. Moreover, we assess neighborhood walkability both subjectively and objectively so as to capture the neighborhood situations in a more comprehensive manner.

An Internet-based questionnaire survey was conducted in January 2018 in order to collect information about residents' walking habits, subjective evaluations of neighborhood environments, and health in selected 49 municipalities in Tokyo. The survey was implemented via an Internet research company, and about 4000 individuals who had registered as a panel of the company responded. Questions related to the residents' subjective evaluations of neighborhoods were based on an internationally used standard questionnaire named ANEWS (Abbreviated Neighborhood Environment Walkability Scale). In addition, objective measures of neighborhood walkability were computed using various GIS datasets such as the small area statistics of 2015 Population Census, road network data, and facility location data. Then, statistical analysis was conducted to assess potential associations between residents' walking habits and both subjectively and objectively measured neighborhood walkability.

Results indicated that the two types of walking habits related to different aspects of neighborhood walkability. For example, neighborhood community was found to have positive association with walking for leisure, but no such association was found with walking for transportation. Further, it was suggested that the associations between residents' walking habits and neighborhood walkability would potentially vary depending on neighborhood settings such as urban and suburban regions. Our results also suggested that subjective and objective measures of walkability might have different associations with the two types of walking even when they were assumed to measure the same aspect of neighborhood environments.

Keywords: walkability, neighborhood environments, walking for transportation, walking for leisure, ANEWS (Abbreviated Neighborhood Environment Walkability Scale)

