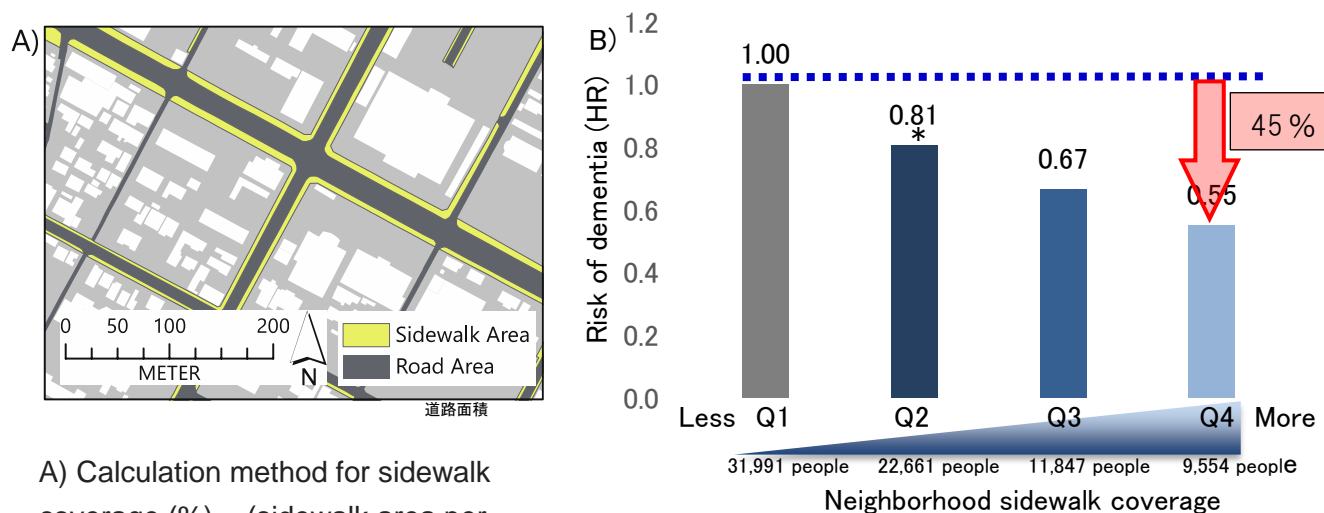


Risk of dementia is halved in walkable areas with many sidewalks

The installation of “sidewalks” is an important neighborhood environmental resource for walking. However, the percentage of sidewalks installed in Japan is known to be particularly low among developed countries. Does the lack of sidewalks on roads near homes affect the risk of dementia? In this study, 76,053 older Japanese individuals over the age of 65 years were followed for three years to investigate the relationship between sidewalk coverage in neighborhood and dementia onset.

Results showed that people living in areas with a high sidewalk coverage had a 45% lower risk of dementia onset than those living in areas with a low percentage of sidewalk coverage. Results of analysis by the extent of urbanization in residential areas (urban and rural) showed that sidewalks were associated with a low risk of dementia only in urban areas. Living in walkable areas with many sidewalks in the city was shown to possibly prevent the onset of dementia.

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A) Calculation method for sidewalk coverage (%) = (sidewalk area per elementary school district / total road area per elementary school district) × 100. Total road area = road area (gray area) + sidewalk area (yellow area)

B) Results adjusted for effects of age, gender, educational history, economic status, marital status, employment status, health status (hypertension, diabetes, hearing loss, heart disease, stroke, depressive symptoms, instrumental activities of daily living, cognitive functions), and duration of residence. * indicates a statistically significant relationship.

■ Background

The installation of “sidewalks” is an important neighborhood environmental resource for walking. However, the percentage of sidewalks installed in Japan is known to be particularly low among developed countries. Therefore, we conducted a follow-up survey of older adults in Japan to examine the relationship between sidewalk coverage and dementia onset in a neighborhood.

■ Participants and Methods

Older adults over the age of 65 years who participated in the Japan Gerontological Evaluation Study (JAGES) in 2010 were followed up for three years to investigate the relationship between sidewalk coverage and dementia onset in a neighborhood. We used the data of 76,053 individuals for whom information on gender; age; dementia; neighborhood sidewalks; and the need for assistance in walking, bathing, and using the bathroom was obtained. Geographic Information Systems (GIS) was used to calculate the sidewalk coverage in the total road area within the elementary school district where the participants lived (Fig. A), and the elementary school district was divided into four groups by quartile. Dementia was defined as level II or higher in the dementia scale of the Long-Term Care Insurance data. Dementia risk was adjusted for effects of age, gender, educational history, economic status, marital status, employment status, health status (hypertension, diabetes, hearing loss, heart disease, stroke, depressive symptoms, instrumental activities of daily living, cognitive functions), and duration of residence. Statistical evaluations were conducted using multi-level analysis. Furthermore, as the role of sidewalks was expected to differ by degree of urbanization, the residential areas of the participants were classified into “urban” and “rural” according to the Organization for Economic Co-operation and Development urban classification, and the relationship between sidewalks and dementia in each classification was analyzed.

■ Results

The numbers of people in groups in ascending order of sidewalk coverage by quartiles were 9,554, 11,847, 22,661, and 31,991 people, respectively. The numbers of those who developed dementia were 502, 766, 1,431, and 2,611, respectively. Results of analysis after eliminating the effects of age, gender, educational history, economic status, marital status, employment status, health status (hypertension, diabetes, hearing loss, heart disease, stroke, depressive symptoms, instrumental activities of daily living, cognitive functions), and duration of residence showed that the risk of dementia was 45% lower in groups with the highest sidewalk coverage than those with the lowest sidewalk coverage. This result was statistically significant even after the analyses excluded the effects of other neighborhood conditions (number of hospitals, number of grocery stores, number of parks, number of railway stations, number of bus stops, slope, education level, unemployment rate, elementary school district area).

Next, the results of analysis by degree of urbanization showed that the preventive effect of sidewalks and dementia risk was seen only in urban areas.

■ Conclusions/significance of this study

Results showed that a high neighborhood sidewalk coverage may have a preventive effect on dementia onset in urban areas. Promoting a walkable urban design through the installation of sidewalks may be important in cities to create dementia-friendly towns.

■ Published paper

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