

## 【Grant-in-Aid for Scientific Research (S)】

### Science and Engineering (Engineering)



**Title of Project : Field survey on Impact of living environments on brain, cardiovascular, respiratory and locomotive system, and co-benefit evaluation of disease and long-term care prevention**

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Research Project Number : 17H06151 Researcher Number : 30302631

Research Area : Built environment engineering, Public health

Keyword : Housing insulation, Healthy life expectancy, Cohort study, Intervention study, Co-benefit

#### 【Purpose and Background of the Research】

The influence on health by housing is summarized in many papers including WHO report, such as influence on overall health and mental health by cold, respiratory illness due to air quality or dampness. Housing and health studies are particularly advanced in United Kingdom and New Zealand. Besides, The chapter 9: Building of IPCC/AR5/WG3 report suggested visualization of co-benefits of residents' health and workplace productivity are effective for promoting low carbon buildings.

#### 【Research Methods】

Outline of the research method is shown in Fig.1.

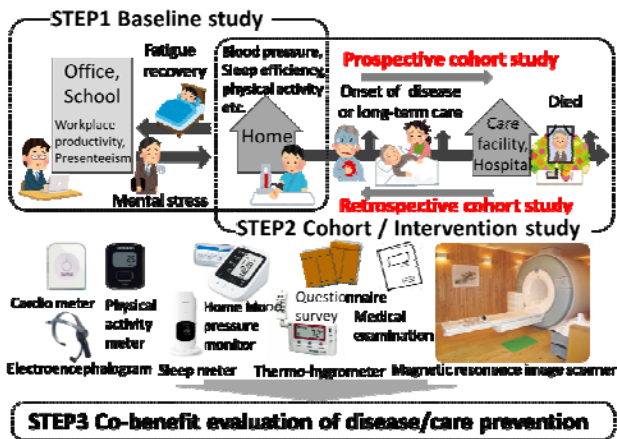


Figure 1. Outline of the research method

#### STEP1 Baseline study

The research team has conducted a baseline survey on the influence of various living environments on health indicators of residents of a wide range of age ranges from infants to the elderly, with good relationships with the national government, local governments, companies and residents carry out.

#### STEP2 Cohort / Intervention study

Cohort studies several years after STEP 1 and intervention studies before and after new construction and renovation will be conducted.

#### STEP3 Co-benefits of disease/care prevention

Combining the research results of STEP 2 with official statistical data, co-benefits of diseases/ care prevention for each household and future forecasts for each national and local governments.

Table1. Architectural and medical research team

1	Keio University	Prof. Toshiharu Ikaga	Architectural and Urban Environmental Engineering	Dr., Eng.
2		Assoc. Prof. Yasue Mitsukura	Brain Engineering	
3		Assoc. Prof. Yuko Oguma	Exercise Epidemiology	
4	Tokyo Metropolitan University	Prof. Emeritus Tanji Hoshi	Public Health	Dr., Medicine
5		Prof. Fumiko Ito	Urban Planning	
6	Jichi Medical University	Prof. Kazuomi Kario	Cardiovascular Medicine	Dr., Medicine
7		Assoc. Prof. Satoshi Hoshida	Public Health	
8	University of Occupational and Environmental Health	Assoc. Prof. Yoshihisa Fujino	Public Health	Dr., Medicine
9		Lecturer Tatsuhiko Kubo	Emergency Medicine	
10	Kanazawa University	Prof. Hiroyuki Nakamura	Midwifery	Dr., Science
11	Toho University	Prof. Fjiko Fukushima	Health Microbiology	
12	Tokyo Dental College	Prof. Masaru Suzuki	Emergency Medicine	Dr., Eng.
13	National Institute of Health Sciences	Dr. Maiko Watanabe	Architectural and Urban Environmental Engineering	
14	University of Kitakyusyu	Prof. Yasuyuki Shiraishi	Architectural and Urban Environmental Engineering	Dr., Eng.
15		Lecturer Shintaro Ando	Architectural and Urban Environmental Engineering	
16	Hosei University	Lecturer Shun Kawakubo	Architectural and Urban Environmental Engineering	Dr., Eng.

#### 【Expected Research Achievements and Scientific Significance】

In this research, architectural studies and medical experts shown in Table 1 cooperate with national government, local governments, companies and residents to measure living environment in daily life and health data. Results of this research are useful not only for individuals but also for policy makers.

#### 【Publications Relevant to the Project】

-Evaluation of Investment in Residential Thermal Insulation, Considering Non-Energy Benefits delivered by Health, Journal of Environmental Engineering, Architectural institute of Japan, Vol. 76, No. 666, 2011

-Lower Physical Performance in Colder Seasons and Colder Houses: Evidence from a Field Study on Older People Living in the Community, Int. J. Environ. Res. Public Health, 2017

【Term of Project】 FY2017-2021

【Budget Allocation】 159,700 Thousand Yen

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