

Factors Relating to Being Housebound – Focusing on Regional Characteristics –

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Purpose: The purpose of this study was to elucidate the regional characteristics related with older people being housebound.

Method: We sent self-completion questionnaires to 59,622 persons aged 65 years and older without disability living in 15 municipalities. The response rate was 55.2%(n=32,891). Going out less than once per week was regarded as being housebound. Physical, psychological, social/environmental and socioeconomic (SES) factors were regarded as independent variables. Respondents were divided into urban residents, suburban residents and rural residents by Population Density and Employment Rate to Primary Industry of their municipality.

Results: Multivariate logistic regression analysis was used to determine the age-adjusted odds ratio related with the factors causing people to being housebound. 1. Almost all physical, psychological, social/environmental, and SES factors were significantly related to being housebound, except “suffering from disease.” 2. The rate of being housebound was significantly higher in rural than urban area. Even after controlling for confounding factors, The regional factor is significantly related to being housebound.

Conclusion: The regional factor is independently related to being housebound. Future research is needed which will take regional factors into consideration.

INTRODUCTION

To prevent the elderly from falling into a state requiring care, the Ministry of Health, Labor and Welfare of Japan pointed out that being housebound is one of the issues to be addressed.

Insurers(usually they are municipality) of the public Long-term care insurance (LTCI) must play an important role in taking measures to prevent older people from requiring care and be aware of their regional character to implement measures effectively.

Recently, study of the housebound is increasing, but almost all of these studies regarded physical, psychological, social/environmental as factors of the housebound¹⁾, and regional characteristics were rarely considered. This study aims to examine factors of the housebound focusing on regional characteristics.

METHODS

The data used in these analyses are drawn from the AGES (Aichi Gerontological Evaluation Study) Project, conducted by Nihon Fukushi University located in Aichi Prefecture. We sent self-completion questionnaires to 59,622 persons(in 15 municipalities) aged 65 years and older who were not disabled in 2003, and 32,891 persons responded.

The frequency of going out was regarded as the dependent variable. Physical (ADL: Activity of daily living, history of falls, etc), Psychological

(self-rated health, depression), Social/environmental (housework, hobby), Socioeconomic (SES: income, years of education) and Regional factors (urban, suburban, rural) were regarded as independent variables.

Respondents were divided into urban residents, suburban residents and rural residents by Population Density and Employment Rate to Primary Industry of their municipality(Figure1).

Multivariate logistic analysis was used to provide adjusted relative risk estimates for association between housebound and regional factors. Factors significantly related to being housebound and significantly varying between urban, suburban and rural area were regarded as independent variables.

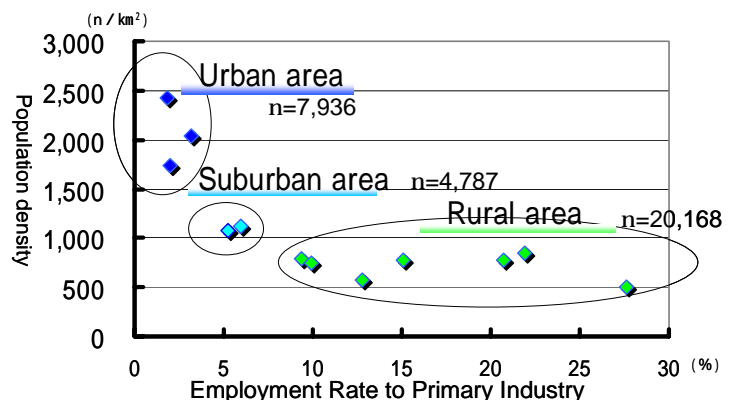


Figure 1. classification of municipalities

MEASURES

The criteria for the housebound varied depending on the researcher. In this study, according to the criterion of the Ministry of Health, Labor and Welfare, a housebound person is defined as a person going out less than once a week.

RESULTS (1)

1. Distribution of housebound elderly:

Table 1 shows the distribution of housebound persons for each age, gender and region. The rate of housebound was low in the younger group, and in the older group the rate was high. Therefore all analysis was done controlling for age.

2. Factors relating to being housebound:

Almost all physical, psychological, social/environmental, and SES factors were significantly related to being housebound, except for "suffering from disease." The poor condition

of each factor correlated with a lower frequency of going out.

The regional factors, focused on in this study were significantly related to being housebound.

Table 1 Rate of the housebound

		Rate(%)
Age	85+	17.2
	81-84	7.3
	75-79	4.3
	71-74	3.6
	65-70	2.8
Gender	Male	4.9
	Female	4.6
Gender (age-adjusted)	Male	5.1
	Female	4.4
Region (age-adjusted)	Rural	5.3
	Suburban	4.2
	Urban	3.6

Table 2 Factors related to being housebound

Factor/Reference		Odds rate	Confidence interval	p-value
Physical factors				
Suffering from disease	Yes/No	1.02	0.87-1.20	0.775
ADL (walking)	Performs independently /Performs with assistance	6.58	5.53-7.83	0.000
Going out by bus	Unable/ Able	6.07	5.37-6.87	0.000
History of falls in 1 year	Several times/None	1.26	1.13-1.42	0.000
Psychological Factors				
Self-rated health	Very bad/Very good	3.94	2.96-5.24	0.000
	Bad/Very good	1.84	1.41-2.39	0.000
	Good/Very good	0.97	0.75-1.25	0.819
Depression (GDS)	Severe/No depression	4.19	3.53-4.97	0.000
	Mild/No depression	2.28	1.98-2.63	0.000
Social factors				
Housework	Not /Fully engaged	4.91	4.22-5.70	0.000
		2.35	1.98-2.78	0.000
	Partially engaged	1.33	1.14-1.55	0.000
Hobby	No/Some hobby	4.42	3.90-5.00	0.000
Socioeconomic factors				
Income	Low/high	1.49	1.18-1.89	0.001
	Middle/high	1.10	0.86-1.40	0.454
Years of Education	-5/13+	3.00	2.23-4.05	0.000
	6-9/13+	1.76	1.36-2.27	0.000
	9-12/13+	1.28	0.98-1.68	0.069
Regional factors				
	Rural/Urban	1.58	1.36-1.84	0.000
	Suburban/Urban	1.22	0.99-1.49	0.056

ADDITIONAL ANALYSIS

Regional factors, were significantly related to being housebound. What makes for these differences?

Two hypotheses are suggested.

1. Distribution of factors related to being housebound varies between urban and rural areas, and the distribution of these factors makes difference in the house-bound rate of each area.
2. Regional factors related to being housebound exist independently.

Table3 shows the difference of distribution of factors related to being housebound between urban and rural area. General linear model was used to determine the age-adjusted distribution of these factors.

Factors which significantly differed between urban and rural area were regarded as confounding factor. Multivariate logistic regression analysis was used to control for these confounding factors.

RESULTS (2)

After controlling for confounding factors, Regional factor relates to being housebound significantly (Table4).

DISCUSSION

Regional factor is considered to be accessible for (hospital, store, etc.) or distance from station or bus stop. Future research needs to clarify what the regional factor is.

But possibility of existence of other factors correlated with a lower frequency of going out which were not regarded to independent variables in this study can not be denied.

CONCLUSIONS

1. Almost all physical, psychological, social/environmental, and SES factors were significantly related to being housebound, except for “suffering from disease.”

Table3 Difference of distribution of factors related to being housebound between in urban and rural area

Factor		Urban	Suburban	Rural	p-value
Physical factors					
ADL (walking)	Performs with assistance	2.7%	2.8%	3.1%	0.309
Going out by bus	Unable	12.0%	13.4%	13.0%	0.039
History of fall in 1 year	Several times	29.3%	30.1%	32.6%	0.000
Psychological Factors					
Self rated health	Bad	27.1%	29.8%	30.3%	0.000
Depression (GDS)	Depression	29.9%	32.5%	34.4%	0.000
Social factors					
Housework	Not engaged	43.8%	46.2%	46.6%	0.131
Hobby	No hobby	22.6%	24.0%	35.6%	0.000
Socioeconomic factors					
Income	Low	40.0%	40.6%	54.2%	0.000
Years of Education	Less than 9 years	58.7%	60.7%	61.6%	0.000

: Factors regarded as confounding factors

2. Rate of the housebound was significantly higher in rural than urban area.

In rural areas, the number of older people in poor condition correlated with the housebound (e.g. depression, lower income, etc.) was greater than in urban areas.

Insurers of the public Long-term care insurance must be aware of their regional character to implement their policies more effectively.

Regional factors independently related to being housebound after controlling for confounding factors.

If the regional factor is unchangeable, appropriate policies must be taken at the upper administration level.

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Table4 Results of multivariate logistic analysis

	Factor/Reference	Odds rate	Confidence interval	p-value
Physical factors				
Going out by bus	Unable/ able	4.71	3.90-5.70	0.000
History of fall in 1 year	Several times/None	0.81	0.68-0.97	0.020
Psychological Factors				
Self rated health	Very bad/Very good	1.29	0.84-1.98	0.240
	Bad/Very good	0.98	0.68-1.43	0.931
	Good/Very good	0.77	0.54-1.09	0.144
Depression (GDS)	Severe/No depression	1.79	1.39-2.31	0.000
	Mild/No depression	1.35	1.11-1.64	0.003
Social factors				
hobby	No/Some hobby	2.78	2.33-3.31	0.000
Socioeconomic factors				
Income	Low/high	1.06	0.79-1.42	0.703
	Middle/high	1.12	0.83-1.50	0.460
Years of Education	-5/13+	1.46	0.96-2.21	0.760
	6-9/13+	1.06	0.76-1.49	0.720
	9-12/13+	1.11	0.79-1.58	0.547
Regional factors				
	Rural/Urban	1.56	1.26-1.92	0.000
	Suburban/Urban	1.31	0.99-1.73	0.056