

# Socioeconomic inequality in health among elderly in Japan

— a cohort study (Part 2)—

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## Background & Purpose:

Pathways from socioeconomic status (SES) to health are unclear. Relationship between SES and health might disappear when health behavioral factors are considered. We examined whether relationships between SES and functional decline remain after adjustment for health behavioral factors.

## Methods: (See Part1)

We used 2737 elderly cohort (See Part 1). We analyzed the relationship between SES factors, social network and 7 health behavioral factors using a 3 models hierarchical regression model (Cox). The effects of factors on functional decline were estimated by the Cox proportional hazard model using factors simultaneously.

## Results:

- Among social factors, SES and social network factors (**Model 1**), "Degree of support reception" (HR 1.09, 95% CI 1.01-1.17) for male and "Income" (2.26, 1.34-3.84) and "Not social support provider" (2.43, 1.42-4.14) for female showed a significant hazard rate(HR).
- Among health behavioral factors (**Model 2**), a significant HR was observed among males who had a "history of falls" (2.55, 1.08 - 6.03), and females who "walked less than 30min. per day" (2.76, 1.21 - 6.26).
- When we used both social and health behavioral factors (**Model 3**), we found significant HRs for males "doing housework" (0.37, 0.14 - 0.99) and for females whose "Income" lower (3.01, 1.59 - 5.71), "Less contact with relatives living apart" (2.30, 1.24-4.28) and who "Not social support provider" (2.27, 1.18-4.36).

**Table Hazard rate of factors**

Factor/Reference	Model1 (Social factors )		Model2 (Health behavioral factors)		Model3 (Both factors )		
	Male HR (CI)	Female HR (CI)	Male HR (CI)	Female HR (CI)	Male HR (CI)	Female HR (CI)	
<b>Social factors</b>							
Income <sup>a</sup>	Low/High	1.28 (0.58-2.85)	2.26 (1.34-3.84)	-	-	1.75 (0.74-4.15)	3.01 (1.59-5.71)
Work status	Unemployed/Employed	3.71 (0.86-16.10)	0.94 (0.40-2.23)	-	-	2.89 (0.64-13.00)	0.75 (0.25-2.26)
Housework	Not /Fully engaged	1.15 (0.49-2.72)	1.37 (0.66-2.84)	-	-	0.77 (0.31-1.93)	1.17 (0.47-2.89)
	Partially/Fully engaged	0.62 (0.26-1.49)	1.70 (0.91-3.17)	-	-	0.37 (0.14-0.99)	1.93 (0.93-3.99)
Role in family except housework <sup>b</sup>	Not engaged/ engaged	0.94 (0.45-1.94)	1.18 (0.71-1.97)	-	-	0.93 (0.43-2.02)	1.16 (0.62-2.17)
Frequency of contact with relatives living apart <sup>c</sup>	Low/High	0.46 (0.22-1.00)	1.62 (0.97-2.71)	-	-	0.49 (0.22-1.11)	2.30 (1.24-4.28)
Frequency of contact with Neighbors <sup>d</sup>	Low/High	1.00 (0.50-1.98)	1.23 (0.73-2.05)	-	-	0.71 (0.32-1.55)	1.13 (0.62-2.07)
Frequency of participation in social activity <sup>e</sup>	Low/High	1.18 (0.57-2.44)	1.71 (0.89-3.30)	-	-	1.05 (0.48-2.31)	1.55 (0.73-3.32)
Degree of support reception <sup>f</sup>	per 1point	1.09 (1.01-1.17)	1.00 (0.94-1.06)	-	-	1.11 (1.03-12.1)	0.99 (0.92-1.07)
Not social support provider <sup>g</sup>	No/Yes	1.44 (0.65-3.21)	2.43 (1.42-4.14)	-	-	1.62 (0.64-4.10)	2.27 (1.18-4.36)
<b>Health behavioral factors</b>							
Medication use	High/No	-	-	1.13 (0.47-2.71)	2.05 (0.85-4.94)	1.43 (0.55-3.72)	1.80 (0.71-4.56)
	Stopped /No	-	-	0.83 (0.20-3.46)	1.73 (0.52-5.76)	0.91 (0.17-5.02)	2.43 (0.71-8.29)
Frequency of medical checkup <sup>h</sup>	Low/High	-	-	1.29 (0.64-2.60)	0.93 (0.53-1.64)	1.06 (0.50-2.25)	0.77 (0.41-1.45)
Natural tooth	None/Not less than 20	-	-	1.24 (0.37-4.14)	0.58 (0.22-1.59)	1.72 (0.46-6.52)	0.65 (0.23-1.79)
	Less than 20 /Not less than 20	-	-	1.79 (0.77-4.15)	0.84 (0.46-1.55)	2.37 (0.90-6.23)	0.71 (0.37-1.36)
Alcohol consumption <sup>i</sup>	High/Low	-	-	2.29 (0.83-6.37)	0.00 (0.00-1.11)	2.14 (0.69-6.66)	0.00 (0.00-7.29)
Smoking	Current smokers/ Never smoked	-	-	0.97 (0.39-2.41)	1.15 (0.28-4.80)	1.17 (0.44-3.16)	1.18 (0.27-5.13)
	Past smokers / Never smoked	-	-	1.16 (0.43-3.14)	2.77 (0.97-7.97)	1.36 (0.46-4.06)	4.00 (1.30-12.26)
Walking time/day	less than 30min./ more than 90min.	-	-	1.94 (0.62-6.03)	2.76 (1.21-6.28)	2.99 (0.80-11.10)	2.49 (0.97-6.43)
	30-90minutes/ more than 90min.	-	-	1.23 (0.39-3.86)	1.53 (0.69-3.43)	1.50 (0.41-5.46)	1.91 (0.76-4.78)
History of fall in 1year	Several times/None	-	-	2.56 (1.08-6.03)	1.49 (0.78-2.85)	2.29 (0.93-5.66)	1.54 (0.77-3.07)
	Once/None	-	-	2.16 (0.94-4.98)	0.88 (0.41-1.89)	2.34 (0.95-5.74)	0.77 (0.33-1.78)

Notes: HR: Hazard Rate CI: Confidence Interval : Significant HR (p<.05)

<sup>a</sup> Low= public assistance recipients, municipal tax-exempted households and old-age welfare pension recipients, municipal tax-exempted households High= municipal tax-exempted persons, municipal tax payer <sup>b</sup> taking charge of the house, looking after children or pets, etc. <sup>c</sup> Low= less than 1day/w High=not less than 1day/w <sup>d</sup> Low = less than several times/w High=everyday <sup>e</sup> Low= almost no High= more than several times/year <sup>f</sup> score(0-24) <sup>g</sup> give advice to families or friends, etc. <sup>h</sup> Low= not in 1year High= at least once in 1year

<sup>i</sup> High= more than 40g everyday Low= less than 40g several days/w

## Conclusions:

Although results for male were unstable, results for female at least suggest that SES and social network factors have significant effect on functional decline even after adjustment of health behavioral factors.

### Reference:

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