LONG TERM DETERMINANTS OF FUNCTIONAL DECLINE OF MOBILITY: AN 11-YEAR FOLLOW-UP OF 5,464 ADULTS OF LATE MIDDLE AGED AND ELDERLY

Chhian Hūi Lêng & Jung-Der Wang

Why mobility limitation

- Early indicator of disability
- Potentially more reversible than IADL & ADL

METHOD

The Taiwan Longitudinal Study on Aging (TLSA)

1996
- 5464

1999
- 4915

2003
- 4125

2007
- 3440

Measurements: mobility

- standing for 15 minutes
- walking 200-300m
- squatting
- running 20-30m
- climbing up two to three floors
- lifting 11kg weight
- raising arms up
- grasping with fingers

Variables to control

Demographics

- gender
- age
- education
- living in nursing home
- employment
- income

Physical conditions

- diabetes
- stroke
- arthritis
- hip fracture
- pain
- bed-days due to sickness or injury

6

Variables of interest

Health characteristics

- self-rated health
- Depression factors (CESD)
  - positive affect
  - negative affect
  - somatic complaints
- cognition
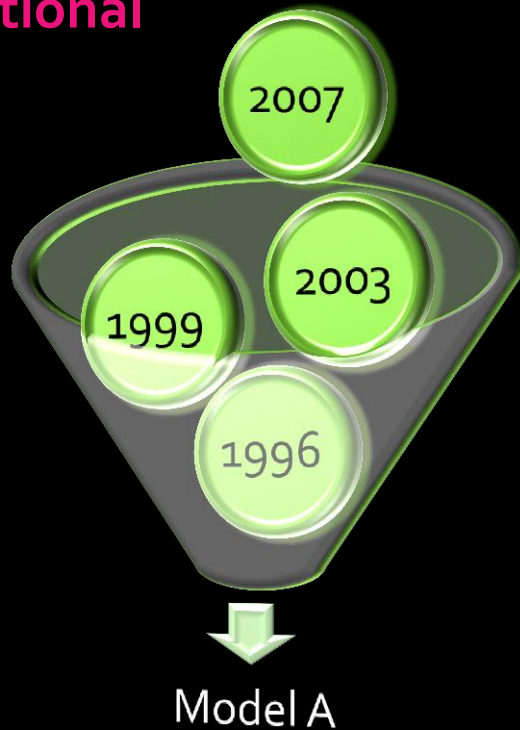
Health behaviors

- drinking
- exercise
- leisure time activities
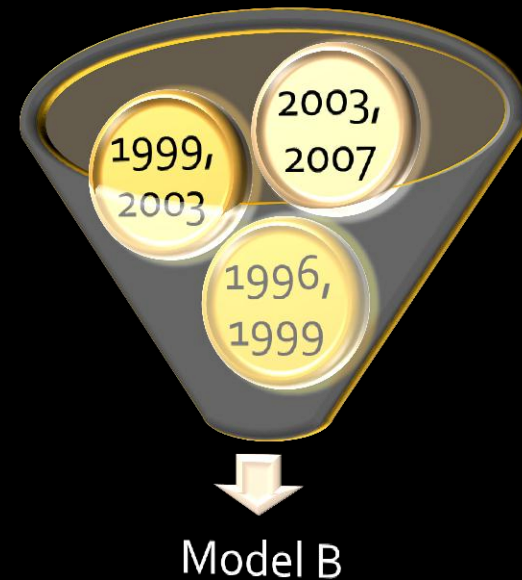 - watching TV
  - gardening
  - walking

Social connection

- living alone
- satisfaction with current cohabitating relationships
- number of siblings with monthly contact
- participation of any social group

mixed models with repeated measurements

Model B: 3-repeated temporal

Model A: 4-repeated cross-sectional

Model A

Model B

Model C: 3-repeated temporal

No mobility limitation in 1996

RESULTS

	Model A	Model B	Model C
	β(SE)	β(SE)	β(SE)
Previous mobility limitation	0.42(0.01)***	0.46(0.01)***	
Demographics			
Gender (female=0)	-0.41(0.07)***	-0.67(0.10)***	-0.67(0.10)***
Age	0.09(0.00)***	0.14(0.01)***	0.10(0.01)***
Education	0.03(0.01)**	-0.04(0.01)**	-0.02(0.01)
Living in nursing home[a]	1.76(0.36)***	1.18(0.61)	1.47(0.83)
Employment(no=0)[a]	-0.54(0.08)***	-0.26(0.10)**	-0.16(0.09)
Income[a]	0.11(0.04)**	0.02(0.05)	-0.02(0.05)

Physical conditions	Model A	Model B	Model C
Diabetes mellitus	0.43(0.09)***	0.72(0.11)***	0.53(0.13)***
Stroke	3.67(0.18)***	4.41(0.22)***	6.35(0.30)***
Arthritis	0.60(0.09)***	0.80(0.11)***	0.86(0.14)***
Hip fracture	2.36(0.19)***	2.52(0.22)***	1.26(0.34)**
Pain	0.58(0.04)***	0.92(0.04)***	0.83(0.05)***
Bed-days due to sickness or injury	0.13(0.01)***	0.21(0.01)***	0.22(0.02)***

Health characteristics	Model A	Model B	Model C
Self-rated health[a]	-0.58(0.04)***	-0.17(0.04)***	-0.17(0.04)***
Depression factors (CESD)			
Positive affect[a]	-0.01(0.02)	0.01(0.02)	-0.02(0.02)
Depressed affect[a]	0.04(0.02)*	0.01(0.03)	-0.01(0.03)
Somatic complaints[a]	0.19(0.01)***	-0.00(0.02)	0.05(0.02)*
Cognitive function[a]	-0.12(0.01)***	-0.01(0.02)	0.01(0.02)

Health behaviors	Model A	Model B	Model C
Alcohol consumption	-0.07(0.02)**	-0.0(0.03)*	-0.05(0.02)
Duration of each exercise	-0.32(0.04)***	-0.07(0.03)*	-0.07(0.03)*
Leisure time activity			
Watching TV[a]	-0.28(0.04)***	-0.08(0.06)	-0.05(0.07)
Gardening[a]	-0.12(0.02)***	-0.13(0.02)***	-0.09(0.02)**
Walking[a]	-0.13(0.02)***	-0.05(0.03)*	0.01(0.03)

Social connection	Model A	Model B	Model C
Living alone[a]	-0.35(0.11)**	0.15(0.15)	-0.04(0.16)
Satisfaction with current cohabitating relationships[a]	0.19(0.04)***	0.00(0.05)	-0.04(0.06)
Number of siblings with monthly contact[a]	-0.05(0.02)**	-0.02(0.02)	-0.02(0.02)
Participation of any social group[a]	-0.31(0.06)***	-0.09(0.08)	-0.00(0.08)

gender, age, education, employment

DM, stroke, arthritis, hip fracture, pain, bed-days

self-rated health, somatic complaints

gardening, exercise, walking, drinking

social relationships

Limitations

- unable to accumulate energy expenditure from various leisure-time physical activities

- different questions regarding cognition and 4th CESD factor

- no: fall during the last one year, body mass index, and diagnosis of osteoporosis

Next steps

- Taking transitions and recovery into account
- Mortality, disability-free life expectancy

Conclusion

- gardening, exercise, and alcohol consumption positively associated with mobility function

- predisposition of depression-related somatic complaints on mobility limitations

APPENDIX

demographics

- gender, age, years of education, satisfaction with present income, living in nursing home, proxy instead of sampled participant interviewed, and employment.

physical conditions

- hypertension, diabetes, heart disease, stroke, cancer, chronic obstructive pulmonary disease (COPD), arthritis, gastric disease, hepatobiliary disease, hip fracture, cataract, renal disease, gout, and spurs detected on spines
- been diagnosed by physician(s), seen by doctor(s) in the past one year, and still had the condition when interviewed.

health behavior characteristics

- depression (CESD), cognition (immediate memory + digit backward test), smoking, drinking, exercise (frequency, duration, sweating, panting), leisure activities (watching TV, listening to radio, reading, playing chess or cards, chatting, gardening, walking, jogging or other outdoor activities, and group activities such as singing and tai-chi), and satisfaction with current health

Social connection

- having a spouse, length of living in this place (<3, ≧3 years), living alone, satisfaction with current cohabitating relationships, number of people living together, number of siblings with monthly contact, spouse's siblings with monthly contact, relatives with monthly contact, friends with weekly contact, and participation of any social activity

DEMOGRAPHIC AND PHYSICAL CHARACTERISTICS OF PARTICIPANTS IN 1996 (N=5131)

Characteristics	Mean(SD)	N(%)
Mobility Limitation (0-24)	2.9(5.6)	
No limitation		2922(57.3)
Demographics		
Female sex		2371(46.2)
Age (50-97)	66.2(9.5)	
Education (0-17)	4.9(4.5)	
Living in nursing home		43(0.8)
Employed		1532(29.9)
Satisfaction with current income (1-5)	3.2(0.9)	

Physical conditions	M(SD)	N(%)
Hypertension		1218(23.8)
Diabetes mellitus		493(9.6)
Heart disease		605(11.8)
Stroke		196(3.8)
Arthritis		709(13.8)
Hepatobiliary disease		163(3.2)
Hip fracture		86(1.7)
Severity of pain (1-5)	1.5(0.8)	
Bed days due to sickness during last month (0-31)	0.9(4.8)	
Self-rated health (1-5)	3.2(1.1)	

Health characteristics	M(SD)
CESD sum (0-30)	5.8(6.1)
CESD factors	
Positive affect (0-6)	3.8(2.4)
Depressed affect (0-9)	1.2(2.1)
Somatic complaints (0-12)	2.3(3.0)
Cognitive function (0-11)	4.4(2.5)
Frequency of alcohol consumption (0-5)	0.7(1.5)
Duration of each exercise (0-3)	1.3(1.4)
Leisure time activity	
Frequency of watching TV (0-4)	3.7(1.0)
Frequency of gardening (0-4)	1.1(1.7)

Social connection	M(SD)	N(%)
Living alone		441(8.6)
Number of people living together	4.7(2.7)	
Satisfaction with current cohabitating relationships (1-5)	4.0(0.8)	
Number of siblings with monthly contact	2.5(2.4)	
Participation of any social group		2183(42.7)