



Social Participation and Life Expectancy - The Case of Older Adults in Taiwan from 1996 to 2003

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Introduction

- There has been an increase in the aging population worldwide, and Taiwan is no exception.
- According to the Ministry of the Interior (MOI) in 2009, there were 2,478,560 people aged 65 years and older in Taiwan, or, 10.71% of the total population.
- Today, the elderly in Taiwan are quite different from those in the past. They seek not only a longer quantity of life but also a better quality of life.







Background

- Health indicator: life expectancy (LE):
 - healthy life expectancy (HLE)
 - un-healthy life expectancy (Un-HLE)
- Overall life expectancy at birth (Central Intelligence Agency(CIA), 2011)
 - Monaco: 89.73 years (longest)
 - Angola: 38.76 years (shortest)
 - Taiwan is ranked 51/221 with the overall life expectancy at birth of 78.32 years.





Background

- Life expectancy
 - An annual increase of 1 point in Center for Epidemiologic Studies Depression Scale (CES-D) scores was associated with a 57% higher risk of mortality (HR = 1.57, $p < .001$) (Zhang et al., 2005).
 - Obesity had little effect on LE for older men or women who were 70 years old or older (Reynolds, Saito, & Crimmins, 2005).
 - Healthy life expectancy was significantly shorter and un-healthy life expectancy was significantly longer for obese people in this age range (Reynolds, Saito, & Crimmins, 2005).
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Background

- Social participation
 - Social participation is confirmed to have effects on self-rated health by age and gender (Lee et al., 2008).
 - The influence of social participation on health status increased with age (Lee et al., 2008).
 - There was a positive effect of social participation on physical health (Sirven & Debrand, 2008; Fang et al., 2009), and a strong influence on psychological well-being (Ellaway & Macintyre, 2007), especially for depression (Hong, Hasche, & Bowland, 2009; Pressman et al., 2009).




Purposes

- There were two phases of the study:
 - The first phase addressed longitudinal changes in depressive symptoms on life expectancy.
 - The second phase estimated the effect of social participation on healthy or un-healthy life expectancy.
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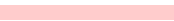
Purposes

- Study purposes
 - To examine the effect of depressive symptoms on LE late in life.
 - To estimate the average number of years that elderly Taiwanese people can expect to live, with and without social participation.
 - Study questions
 - Whether depressive symptoms affect LE and HLE.
 - Whether social participation affects LE, HLE, and Un-HLE among elderly Taiwanese people.
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Methods

- Sample
 - “Surveys of Health and Living Status of the Elderly in Taiwan” (SHLSE).
- Inclusion criteria
 - Taiwanese elderly people aged 60 or older in 1996
 - The ability to speak or read Mandarin or Taiwanese
 - Non-institutionalized
 - No cognitive impairment




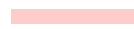


Methods

- Design
 - Longitudinal national survey with a multi-stage national probability sampling.
 - A total of 2,599 people completed the Wave 1 (response rate = 89.3%) in 1996.
 - Wave 1: 2,599 (1996)
 - Wave 2: 2,149 (1999)
 - Wave 3: 1,566 (2003)
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Measures

- Depressive symptoms:
 - A short-form of the Center for Epidemiologic Studies Depression Scale (CES-D).
 - Ten questions were included in this scale. Each question was scored from 0 (rarely) to 3 (most or all of the time).
 - The total scores ranged from 0 to 30, with a cut-off point of 10. A higher score represented a tendency toward more depression symptoms.
 - CES-D is a widely used scale, with a Cronbach's α of .79-.86 (Boey, 1999; Li & Hicks, 2010).
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Measures

- Social participation:
 - “Did you participate in social activities or clubs regularly (at least once per month during the past 12 months)?”
 - The question was dichotomized into “yes” or “no” responses.



Analysis

- Interpolation Markov Chain (IMaCh) (Brouard & Lièvre): multinomial logistic regression.
 - IMaCh program was applied to deal with many waves of data at once and different lengths of intervals between surveys.
 - IMaCh program was also be used for calculating HLE as well as Un-HLE for a single year age by other covariates, such as depression.
 - Estimates of total, healthy, and un-healthy life expectancy for elderly Taiwanese with or without social participation were determined.
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Results

- Table 1. Demographic Data

		N	%
Gender	Male	1,454	55.9
	Female	1,145	44.1
Age	65-69	819	31.5
	70-74	932	35.9
	75-79	526	20.2
	80-84	238	9.2
	85-89	63	2.4
	90+	21	0.8

Results

- Table 2. Health Transitions of Depressive Symptoms (N=2,599)

	Wave 1 (1996)	Wave 2 (1999)	Wave 3 (2003)
Depression-Free	1,929 (74.2%)	1,638 (76.2%)	1,241 (79.2%)
Depression	670 (25.8%)	511 (23.8%)	325 (20.8%)
Dead		307	808
Missing		143	225



Results

- Table 3. Proportion of Estimated Health Life Expectancy in 1996

Age	LE	HLE	Un-HLE	%HLE
65	17.2	13.7	3.6	79.3
70	13.4	10.5	3.0	77.9
75	10.1	7.7	2.4	76.2
80	7.45	5.5	1.9	74.5
85	5.4	3.9	1.5	72.5
90	3.9	2.8	1.2	70.3

LE: life expectancy; HLE: healthy life expectancy; Un-HLE: un-healthy life expectancy



Results

- Table 4. Proportion of Healthy Life Expectancy for Depressed versus Non-Depressed People (1996)

	Depression-Free			Depression		
	LE	HLE	%HLE	LE	HLE	%HLE
65	17.4	14.2	81.6	16.4	10.9	66.5
70	13.6	11	80.9	12.4	7.5	60.5
75	10.4	8.5	81.7	9	4.9	54.4
80	7.8	6.3	80.8	6.4	2.9	45.3
85	5.7	4.7	82.5	4.5	1.6	35.6

LE: life expectancy; HLE: healthy life expectancy

Results

- Table 5. Distribution of social participation by gender

Social participation \ Gender	N	Male	Females
SP	1,220 (46.9%)	808 (55.6%)	412 (36%)
Non-SP	1,379 (53.1%)	646 (44.4%)	733 (64%)
Total	2,599 (100%)	1,454 (55.9%)	1,145 (44.1%)



Results

- Table 6. The Effect of Social Participation (SP) on LE, HLE, and Un-HLE



Age	Participation						Non-Participation					
	LE	SE	HLE	SE	Un-HLE	SE	LE	SE	HLE	SE	Un-HLE	SE
65	17.9	.409***	14.9	.404***	3.0	.214***	16.6	.361***	12.5	.372***	4.1	.238***
70	14.0	.380***	11.5	.362***	2.5	.188***	12.9	.323***	9.5	.311***	3.4	.199***
75	10.6	.359***	8.6	.338***	2.1	.177***	9.7	.300***	7.0	.283***	2.7	.188***
80	7.8	.340***	6.2	.322***	1.6	.175***	7.1	.284***	5.0	.272***	2.2	.192***
85	5.7	.311	4.4	.303*	1.3	.177*	5.1	.260	3.5	.261*	1.7	.202*
90	4.1	.266	3.1	.277	1.0	.182	3.8	.222	2.4	.250	1.3	.213

* p<.05; **p<.01; ***p<.001

SP: social participation; LE: life expectancy; HLE: healthy life expectancy; Un-HLE: un-healthy life expectancy



Discussion

- Longitudinal changes in depression showed a decline over the years of this study. The incidence rate of depression decreased 2.0% from Wave 1 to Wave 2 and decreased 3.0% from Wave 2 to Wave 3.
 - Older Taiwanese without depressive symptoms could expect to live 1-1.4 years longer than those with depressive symptoms, and to be healthy to live 3.1-3.6 years more than those with depressive symptoms.
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Discussion

- The average total LE ranged from 17.2 years at age 65 to 3.9 years at age 90.
 - At age 70:
 - Taiwan (Chiao et al., 2012): 13.4 years (1996)
 - China (Liu et al., 2006): 11.9 years
 - America (Crimmins et al., 2009): 14.3 years (1994)
 - Japan (Konno et al., 2002): 16.1 years for men and 17.0 years for women
 - The Philippines (Cruz et al., 2000): 7.2 years for men and 10.4 years for women
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Discussion

- Social participation affected LE, HLE, and Un-HLE for the elderly Taiwanese population.
 - Elderly individuals with regular social participation were found to have an additional 0.7-1.3 years of LE, an additional 1.2-2.4 years of HLE, and 0.5-1.1 fewer years of Un-HLE.
 - Older Taiwanese can benefit from social participation if they participate in the social activities regularly.
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Limitations

- The variable “social participation” was only measured by one question.
 - A 10-item CES-D instead of a 20-item CES-D scale was used in this research.
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Recommendations

- Social participation has been identified to affect LE. Therefore, it is essential to increase accessibility to social activities for the elderly Taiwanese population.
 - Diverse social activities, such as clubs, educational programs, and volunteering should be provided to increase the motivation and fulfill the needs of the elderly population.
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Thank you for your time~

