

Factors Associated with Developmental Trajectories of Smoking Behaviour Change among Older People in Taiwan: Findings from the Taiwan Longitudinal Study on Aging



Che-Wei Hsu¹, Shioh-Ing Wu², Min-Hua Jen, PhD³, Samuel Stoddart, PhD³, Baai-Shyun Hurng, PhD¹, Yu-Hsuan Lin¹, Shu-Ti Chiou, MD, PhD¹

¹ Bureau of Health Promotion, Department of Health, Taiwan, ² Food and Drug Administration, Department of Health, Taiwan,

³ HERON Evidence Development Ltd, UK

INTRODUCTION

- Smoking cessation can improve health even late in life or among those who are already ill.
- Relative fewer research on smoking behaviour change among those aged over 50s.

OBJECTIVES OF THE PRESENT STUDY

- To identify distinctive trajectory groups of behaviour change among the older persons.
- To investigate factors associated with quitting smoking in later age.

METHODS

Study Design and Participants

The data came from the Taiwan Longitudinal Study on Aging (TLSA), which comprised a national representative sample of elderly and near elderly selected from non-aboriginal townships in Taiwan.

- Data collected in 1996, 1999, 2003, and 2007 were used for this analysis.
- 3,132 participants who completed face-to-face questionnaire interview in four waves of survey were included. (Age 65 and above: 46.52%; Female: 49.74%; Table 1)

Variables

- Smoking behaviour in each wave of survey: self-reported data in 1996, 1999, 2003, and 2007; categorized into current smoker and non-smoker.

Covariates:

- Background characteristic: gender, age in 1996, education level, marital status, living arrangement and satisfaction, and annual income.
- Health status: self-rated health compared with past year, depression symptom, hypertension, diabetes mellitus, heart related disease, physical limitation, and hospitalization in past year.
- Health behaviour: alcohol drinking, betel nut chewing, and regular exercise.

Statistical Analysis

- Group-based trajectory modeling

CONTACT INFORMATION

Corresponding author: Baai-Shyun Hurng, PhD, Director Population and Health Research Center Bureau of Health Promotion, Department of Health, Taiwan Phone: 886-4-2259-1999 ext 500, E-mail: hbs@bhp.doh.gov.tw

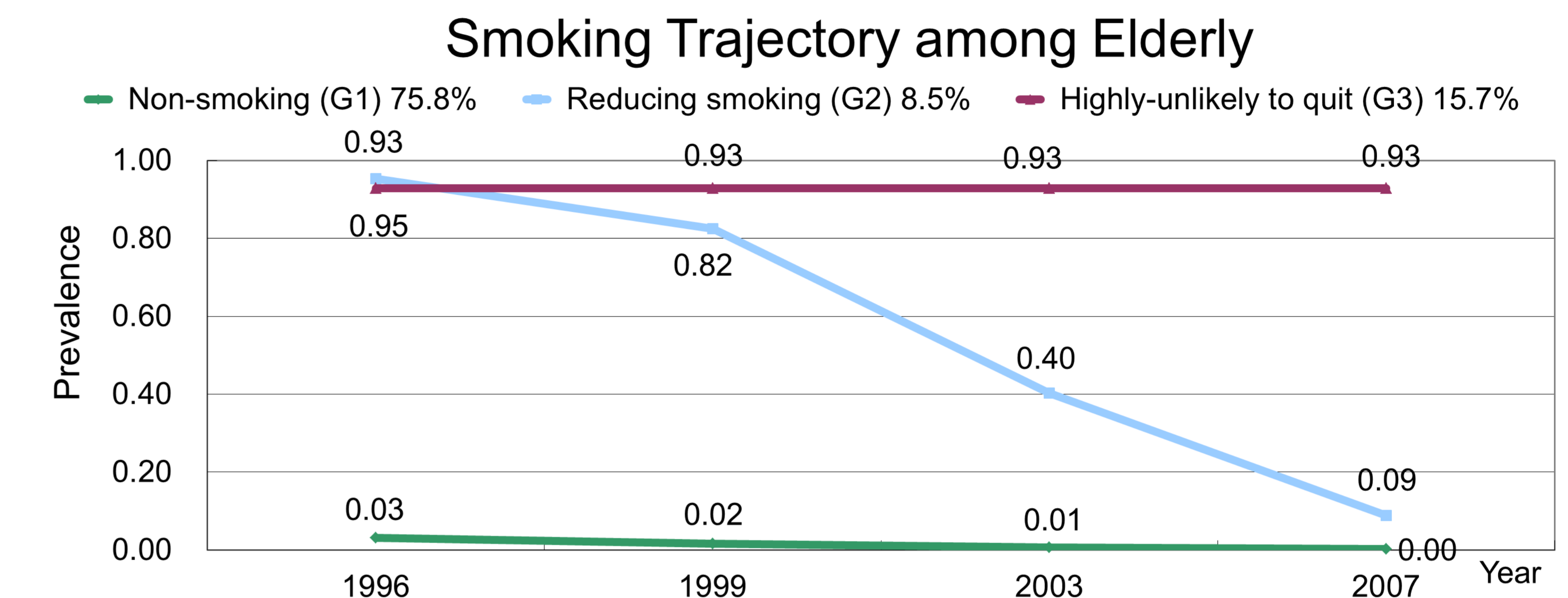
Factors	Overall	Non-smoking (G1)	Reducing smoking (G2)	Highly-unlikely to quit (G3)
	n=3,132	n=2,403	n=263	n=466
	%	%	%	%
Background characteristic				
Man	50.26	37.91	90.49	91.20
Age 65 and above	46.52	48.40	50.19	34.76
Education level				
Illiterate	29.05	33.33	20.15	12.02
Primary	46.33	42.95	54.75	59.01
Junior	10.25	9.53	12.17	12.88
Senior	8.17	7.99	8.37	9.01
College and above	6.19	6.20	4.56	7.08
No spouse or companion	22.29	24.17	12.60	18.10
Living alone	5.99	5.70	4.33	8.39
Unsatisfied with current living arrangement	2.49	2.61	1.23	2.55
Annual income (higher than USD 10,000)	36.65	34.89	40.38	43.25
Health status				
Self-rated health (worse than past year)	41.14	41.21	45.08	38.57
Depression	17.80	18.61	12.81	16.51
Hypertension	23.81	26.10	19.69	14.38
Diabetes mellitus	7.59	8.18	7.48	4.65
Heart related disease	12.45	14.21	7.87	5.97
Any ADL limitation	1.85	2.16	0.79	0.88
Any IADL limitation	23.45	26.46	16.14	12.14
Ever hospitalized in past year	12.93	13.21	13.39	11.26
Health Behaviour				
Alcohol drinking	23.39	15.89	46.46	48.79
Betel nut chewing	7.24	3.45	17.32	20.97
Regular exercise	53.03	55.74	46.06	43.05

RESULTS

- Three distinct trajectory groups were identified: non-smoking (75.8%), highly-unlikely to quit (15.7%) and gradually reducing smoking (8.5%). (Table 1, Figure 1)
- Compared with those who belonged to highly-unlikely to quit group, age 65 or older was more likely to belong to gradually reducing smoking group. (Table 2)
- After adjusted for socio-demographic factors, drinking alcohol or chewing betel were associated with not quitting smoking. Contrarily, those who have poor health, such as having functional limitation, ever hospitalized during past year or being diagnosed with hypertension, diabetes or heart-related disease, were more likely to quit smoking. Having regular exercise was positively associated with quitting smoking. (Table 3)
- No significant association was observed between marital status, satisfaction on current living arrangement, or depressive symptom with quitting or continuing smoking. (Table 3)

CONCLUSIONS

- Getting older, having health problem, or health promoting behaviour such as regular exercise are significantly related to quitting smoking in later life.
- Harmful health behaviours, such as alcohol drinking and betel nut chewing, are significantly associated with less possibility to quit smoking in later life.
- Specific smoking cessation programs are warranted to help elder smokers quit earlier for health sake.



Note: All averaged posterior probabilities are larger than 0.8, indicating a good-fitting model. OCCJ ranged from 20.98 to 140.65, indicating high assignment accuracy of the three-group model.

Table 2. Effect of Time-stable Variables on Group Membership Probability.

Time-stable factors	G2 v.s. G3			G2 v.s. G1			G3 v.s. G1		
	β	SE	P-value	β	SE	P-value	β	SE	P-value
Man	-0.31	0.35	0.38	3.08	0.24	<0.05	3.40	0.23	<0.05
Age 65+	0.83	0.17	<0.05	0.04	0.14	0.78	-0.79	0.13	<0.05
Primary	-0.41	0.25	0.10	-0.15	0.19	0.42	0.25	0.20	0.20
Junior	-0.61	0.33	0.06	-0.64	0.26	<0.05	-0.04	0.25	0.89
Senior	-0.41	0.36	0.25	-0.98	0.28	<0.05	-0.57	0.27	<0.05
College and above	-0.48	0.38	0.21	-1.14	0.30	<0.05	-0.66	0.28	<0.05

Table 3. Effect of Time-varying Variables on Prevalence of Smoking, by Trajectory Groups.

Time-varying factors	Non-smoking			Reducing smoking			Highly-unlikely to quit		
	β	SE	P-value	β	SE	P-value	β	SE	P-value
No spouse or companion	0.35	0.65	0.59	0.28	0.23	0.23	0.16	0.48	0.73
Living alone	-0.64	4.36	0.88	0.28	0.32	0.39	0.72	0.67	0.29
Unsatisfied with current living arrangement	-0.49	2.33	0.83	0.77	0.52	0.14	0.32	0.89	0.72
Annual income (higher than USD 10,000)	0.18	0.61	0.77	0.00	0.18	0.99	1.11	0.46	<0.05
Self-rated health (worse than past year)	-1.21	0.87	0.16	0.18	0.15	0.25	-0.75	0.37	<0.05
Depression	0.62	0.63	0.32	-0.11	0.28	0.68	-0.11	0.33	0.73
Hypertension	0.51	0.64	0.43	-0.53	0.20	<0.05	-0.70	0.29	<0.05
Diabetes mellitus	0.99	0.72	0.17	-0.23	0.32	0.47	-1.42	0.34	<0.05
Heart related disease	-0.31	0.90	0.73	-0.88	0.25	<0.05	-0.74	0.40	0.07
Any ADL limitation	-0.08	1.10	0.94	0.55	0.46	0.24	-3.64	0.51	<0.05
Any IADL limitation	0.18	0.64	0.77	-0.26	0.20	0.19	-1.22	0.29	<0.05
Ever hospitalized in past year	-0.70	1.09	0.52	-0.38	0.20	0.06	-1.58	0.34	<0.05
Alcohol drinking	2.94	0.67	<0.05	1.13	0.16	<0.05	2.13	1.30	0.10
Betel nut chewing	4.39	0.46	<0.05	2.49	0.49	<0.05	0.64	0.56	0.25
Regular exercise	-0.77	0.61	0.21	-0.58	0.18	<0.05	0.23	0.26	0.38

Note: Model adjusted for the time-stable covariates listed in table 2.