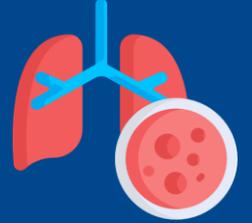


# Association between family history and lung cancer risk among Chinese women in Singapore



Theme: A. Non-communicable diseases

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## BACKGROUND

- Lung cancer is the most common cancer in men and the third most common cancer in women.<sup>1</sup>
- In Singapore, lung cancer is among the top cancer types by incidence and mortality not only for males, but also for females despite their very low smoking prevalence at around 4%.<sup>2,3</sup>
- It is important to identify potential risk factors other than smoking to explain the high lung cancer prevalence among Singaporean women.
- Aim: To evaluate the association between family history and lung cancer risk, including its subtypes, as well as potential effect modifications by smoking and fruit consumption.

## METHODS

- A total of 1,159 Chinese women were recruited in a case-control study conducted in public hospitals in Singapore from 2005-2008.
- After excluding participants with incomplete family history information, 374 cases and 785 controls remained in the final analysis.
- Adjusted odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using unconditional logistic regression, adjusting for potential confounders.

## RESULTS

- There were more ever-smokers among cases (32.9%) than controls (11.7%). Cases were more likely than controls to have a history of respiratory disease, family history of cancer, lower body mass index (BMI), and consumed less meat, fruits and vegetables.
- Overall, family history of lung cancer was associated with a higher risk for lung cancer (OR: 2.08, 95% CI: 1.25-3.47), especially among never-smokers (OR: 2.78, 95% CI: 1.57-4.90).
- The interaction effect between family history of any cancer and fruit consumption was statistically significant ( $P = 0.021$ ). Stratification by fruit consumption identified a significant association between family history of lung cancer and higher risk of lung cancer among never-smokers who had low fruit consumption (OR: 3.09, 95% CI: 1.37-7.01).
- When stratified by the histologic type of lung cancer, family history of lung cancer was significantly associated with adenocarcinoma lung cancer risk (OR, 1.90, 95% CI: 1.06-3.39), particularly among never-smokers (OR: 2.39, 95% CI: 1.26-4.51).

**Table 1. Association between family history (FH) and lung cancer among women stratified by smoking status**

	FH of cancer in first-degree relatives	Cases (n (%))	Controls (n (%))	Adjusted OR (95% CI)
	<b>All women</b>			
	FH absent	254 (87.5%)	608 (93.5%)	1.00 (ref.)
	FH present	35 (12.5%)	42 (6.5%)	<b>2.08 (1.25-3.47)</b>
	<b>Never-smokers only</b>			
	FH absent	164 (85.0%)	535 (94.0%)	1.00 (ref.)
	FH present	29 (15.0%)	34 (6.0%)	<b>2.78 (1.57-4.90)</b>
	<b>Ever-smokers only</b>			
	FH absent	94 (92.2%)	73 (90.1%)	1.00 (ref.)
	FH present	8 (7.8%)	8 (9.9%)	0.67 (0.22-2.04)

OR: Odds ratio; CI: confidence interval; Adjusted for age, type of dwelling, years of education, environmental tobacco smoke exposure, BMI, history of respiratory disease, meat consumption, fruit consumption, vegetable consumption, and smoking status, excluded smoking status when stratified by smoking status.

**Table 2. Association between family history and lung cancer risk among women, stratified by smoking status, lung cancer subtype and fruit consumption**

Family history (FH) of cancer in first-degree relatives	All women			Never-smokers only		
	Cases (n (%))	Controls (n (%))	Adjusted OR (95% CI)	Cases (n (%))	Controls (n (%))	Adjusted OR (95% CI)
<b>Adenocarcinoma lung cancer</b>						
FH absent	160 (87.4%)	608 (93.5%)	1.00 (ref.)	120 (86.3%)	535 (94.0%)	1.00 (ref.)
FH present	23 (12.6%)	42 (6.5%)	<b>1.90 (1.06-3.39)</b>	19 (13.7%)	34 (6.0%)	<b>2.39 (1.26-4.51)</b>
<b>Low fruit consumption (<math>\leq 7.362</math> servings per week)</b>						
 FH absent	172 (88.7%)	322 (94.7%)	1.00 (ref.)	102 (85.7%)	277 (95.5%)	1.00 (ref.)
 FH present	22 (11.3%)	18 (5.3%)	1.98 (0.97-4.06)	17 (14.3%)	13 (4.5%)	<b>3.09 (1.37-7.01)</b>
<b>High fruit consumption (<math>&gt; 7.362</math> servings per week)</b>						
 FH absent	86 (85.2%)	286 (92.3%)	1.00 (ref.)	62 (83.8%)	258 (92.5%)	1.00 (ref.)
 FH present	15 (14.8%)	24 (7.7%)	<b>2.24 (1.05-4.77)</b>	12 (16.2%)	21 (7.5%)	<b>2.58 (1.14-5.84)</b>

OR: Odds ratio; CI: confidence interval; Adjusted for age, type of dwelling, years of education, ETS exposure, BMI, history of respiratory disease, meat consumption, fruit consumption, vegetable consumption, frequency of cooking, and smoking status, excluded fruit consumption when stratified by low/high fruit consumption, and excluded smoking status when stratified by never smokers.

## Conclusions

- Family history of lung cancer is a significant risk factor for lung cancer in Singaporean Chinese women, especially among never-smokers.
- Future studies are warranted to validate our findings on family history of lung cancer as well as fruit consumption as potential effect modifiers.