

Is physician gender associated with the patient recovery time?

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Research question

- This study research on the relationship between the physician attributes (age, gender, title, etc.) and the patient medical experience (recovery time, satisfactory, etc.)
- It estimate the effects of physician gender difference on the patient recovery time

Motivation

- Health leads potential GDP growth
 - One factor of human capital (the other is education)
 - Consumption good
 - Investment good with 1.6 income elasticity (Fogel, 1993)
- China's Medical Reform
 - Health insurance: almost realized full coverage
 - Supply side: What can hospitals do to provide better service?

Literature

- Patients of female physicians were **more satisfied** than were those of male physicians, even after adjusting for patient characteristics, visit length, and physician practice style behaviors. (Bertakis, 1972)
- Female physicians were **more likely to value psychosocial factors** in patient care, educating and counseling patients about health matters. (Maheux, 1990)
- Physicians may be **less likely to under- or over-diagnosis disease** in particular patient groups. (McKinlay, 2002)
- Patients of female physicians received **similar quality of care** compared with patients of male physicians. (Kim, 2005)
- Median and mean of satisfactory scores were **lower** for women physicians and underrepresented physicians. (Sylk, 2019)

Data: survey research

- Questionnaire design: *Guidelines for the Diagnosis and Treatment of Chronic Cough in Children*
- Regions: Shanxi Province, Heilongjiang Province and Beijing
- Respondents: Children under 16 with Chronic Cough
 - Why Chronic Cough?
 - High-occurrence disease during data collection period
 - Normally happens which excludes singular samples
- Sample size: 2333 questionnaires after data cleaning

Data

- Patient attributes: age, gender, illness type, recovery time, total spending
- Physician attributes: physician age, physician gender, physician title
- Hospital attributes: department type, hospital level
- Regional fixed effect: province or city
- Patient rating: physician attitude, clarity of explanation, satisfactory rate, affordable medication,

Data: patients

Patients attributes		Category	Grouped by patients gender		P-value
			Male patients	Female patients	
n			1210	1123	
total time (days)	less than 3		216 (17.9)	175 (15.6)	0.204
	3-5		106 (8.8)	103 (9.2)	
	5-7		122 (10.1)	135 (12.0)	
	7-14		226 (18.7)	234 (20.8)	
	above 14		540 (44.6)	476 (42.4)	
age (years old)	0-5		251 (20.7)	231 (20.6)	0.716
	5-8		354 (29.3)	315 (28.0)	
	8-12		513 (42.4)	478 (42.6)	
	above 12		92 (7.6)	99 (8.8)	
illness type	Cough variant asthma		65 (5.4)	51 (4.5)	0.631
	Upper respiratory cough syndrome		376 (31.1)	372 (33.1)	
	Cough after respiratory infection		643 (53.1)	587 (52.3)	
	Allergic cough		126 (10.4)	113 (10.1)	

Data: physicians

Physicians attributes	Category	Grouped by physician gender		P-value
		Male physicians	Female physicians	
n		1040	1293	
physician age (years old)	20-30	34 (3.3)	46 (3.6)	0.01
	30-35	203 (19.5)	235 (18.2)	
	35-40	396 (38.1)	415 (32.1)	
	40-50	324 (31.2)	477 (36.9)	
	above 50	83 (8.0)	120 (9.3)	
physician title	Resident physician	55 (5.3)	62 (4.8)	0.569
	Attending doctor	462 (44.4)	548 (42.4)	
	Deputy director	227 (21.8)	283 (21.9)	
	Chief physician	296 (28.5)	400 (30.9)	

Methods

- Principle Component Analysis: select features
- Multinomial Logistic Regression:

for $1 \leq j \leq J - 1$

$$\ln \left(\frac{Pr(TotalTime = j|X, \theta)}{Pr(totaltime = J|X, \theta)} \right) = \eta_j = \beta_{j,0} + \beta_{j,1}PhysicianGender_{1,i} + \beta_{j,K}Z_{K,i}$$

where Z is a group of features, including patient attributes, physician attributes, hospital attributes and regional fix effect.

Expected result & future studies

- Female are normally more talkative and sensitive, which can comfort and encourage patients, and therefore their patients would have a shorter recovery time.
- This study only discusses the gender impact on recovery time. However, other variables like patient satisfactory or medical spending can be a good subject for future research.