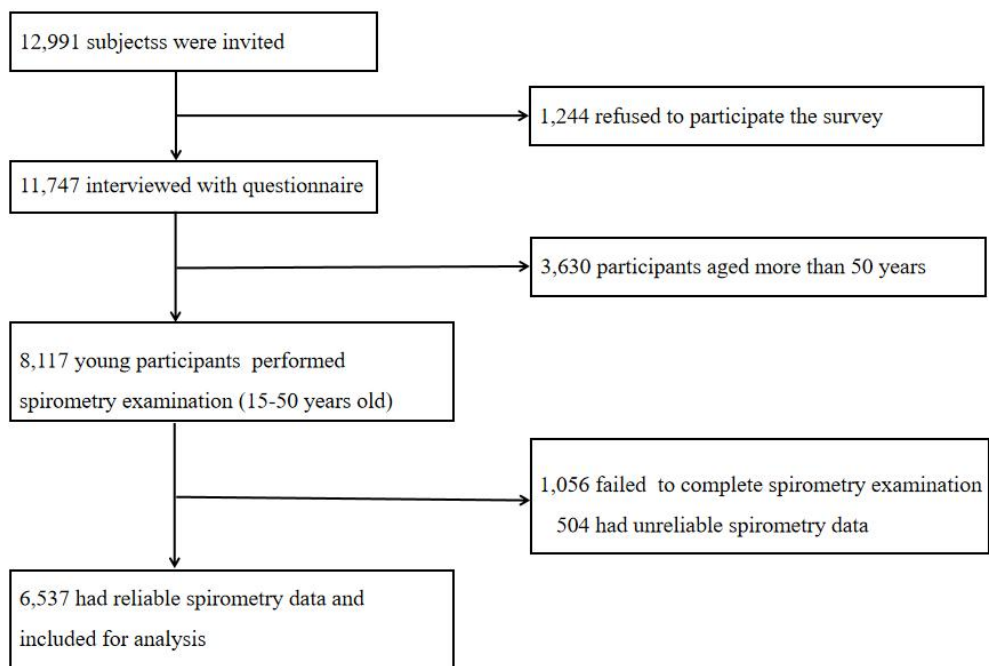


e-Figure 1. Flow of participants through the study.

e-Table 1. Characteristics of participants with small airway dysfunction aged less than 50 years.

	Non-SAD (n=4,161)	SAD (n=1,807)	P value
Exposures			
Cigarette smoking			
Never-smoker	3020 (72.6%)	1343 (74.3%)	0.173
Ever-smoker	1141 (27.4%)	464 (25.7%)	
History of TB	187 (4.5%)	105 (5.8%)	0.036
Household air pollution	2734 (65.7%)	1352 (74.8%)	<0.001
Occupational exposure	377 (9.4%)	225 (12.8%)	<0.001
O ₃ exposure, ppb	68.57 (11.19)	71.02 (10.09)	<0.001
Lung function parameters			
FVC pre-BD % pred	103.35 (19.11)	97.64 (20.89)	<0.001
FVC post-BD % pred	102.88 (18.92)	97.53 (17.68)	<0.001
FEV ₁ pre-BD % pred	104.71 (17.35)	85.17 (15.05)	<0.001
FEV ₁ post-BD % pred	105.75 (18.30)	92.12 (15.89)	<0.001
FEV ₁ /FVC post-BD, %	87.70 (6.30)	80.75 (6.08)	<0.001
MMEF pre-BD % pred	87.58 (23.88)	48.18 (12.78)	<0.001
MMEF post-BD % pred	93.52 (59.67)	64.07 (50.30)	<0.001
FEF _{50%} pre-BD % pred	97.01 (22.32)	60.22 (15.66)	<0.001
FEF _{50%} post-BD % pred	102.05 (26.06)	75.84 (19.95)	<0.001
FEF _{75%} pre-BD % pred	98.55 (33.80)	50.35 (16.82)	<0.001
FEF _{75%} post-BD % pred	106.92 (38.30)	67.78 (27.14)	<0.001
Respiratory symptoms			
Cough	343 (8.3%)	158 (8.8%)	0.613
Sputum	354 (8.6%)	136 (7.6%)	0.194
Recurrent wheezing	95 (2.3%)	69 (3.8%)	0.001
Apnea	666 (16.2%)	287 (16.0%)	0.836
History of asthma	98 (2.4%)	77 (4.3%)	<0.001

Data are expressed as number (%) or mean (standard deviation, SD). HAP: Household air pollution.

TB: Tuberculosis. O₃: Ozone. pre-BD: pre-bronchodilator. post-BD: post-bronchodilator. FVC: Forced vital capacity. FEV₁: Forced expiratory volume in the first second. MMEF: Maximum mid-expiratory flow. FEF: Forced expiratory flow.

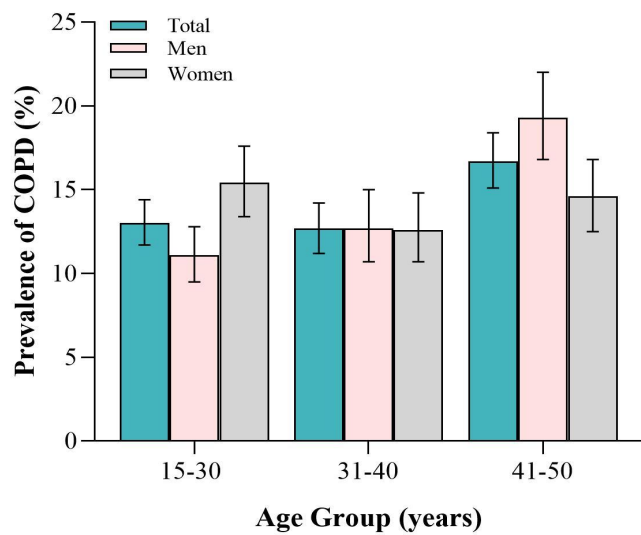
e-Table 2. The prevalence (%) of chronic obstructive pulmonary disease among the residents aged less than 50 years.

Variables	Overall		Men		Women	
	Cases/total (n/N)	Prevalence of COPD (95% CI)	Cases/total (n/N)	Prevalence of COPD (95% CI)	Cases/total (n/N)	Prevalence of COPD (95% CI)
Prevalence	511/6537	7.8 (7.2-8.5%)	263/3256	8.1 (7.2-9.1%)	248/3281	7.6 (6.7-8.5%)
Age, years						
15–30	127/2578	4.9 (4.1-5.8%)	65/1418	4.6 (3.6-5.8%)	62/1160	5.3 (4.1-6.8%)
31–40	151/1980	7.6 (6.5-8.9%)	73/942	7.7 (6.1-9.6%)	78/1038	7.5 (6.0-9.3%)
41–50	233/1979	11.8 (10.4-13.3%)	125/896	14.0 (11.7-16.4%)	108/1083	10.0 (8.3-11.9%)
<i>P for trend</i>		<0.001		<0.001		<0.001
Education attainment						
Primary school and lower	211/2271	9.3 (8.1-10.6%)	109/935	11.7 (9.7-13.9%)	102/1336	7.6 (6.3-9.2%)
Middle and high school	230/2980	7.9 (7.0-9.0%)	120/1547	7.8 (6.5-9.2%)	110/1361	8.1 (6.7-9.7%)
College and higher	70/1358	5.2 (4.0-6.5%)	34/774	4.4 (3.1-6.1%)	36/584	6.2 (4.4-8.4%)
<i>P for trend</i>		<0.001		<0.001		0.337
BMI, kg/m²						
<18.5	15/441	3.4 (1.9-5.5%)	7/206	3.4 (1.4-6.9%)	8/235	3.4 (1.5-6.6%)
18.5-24.9	291/3673	7.9 (7.1-8.8%)	147/1772	8.3 (7.1-9.7%)	144/1901	7.6 (6.4-8.9%)
≥25.0	205/2423	8.5 (7.4-9.6%)	109/1278	8.5 (7.1-10.2%)	96/1145	8.4 (6.8-10.1%)
<i>P for trend</i>		0.001		0.038		0.031
Cigarette smoking						
Never-smoker	358/4757	7.5 (6.8-8.3%)	112/1553	7.2 (6.0-8.6%)	246/3204	7.7 (6.8-8.7%)
Ever-smoker	153/1777	8.6 (7.3-10.0%)	151/1703	8.9 (7.6-10.3%)	2/74	2.7 (0.3-9.4%)
<i>P for difference</i>		0.146		0.083		0.109
History of TB						
Yes	33/327	10.1 (7.0-13.9%)	21/179	11.7 (7.4-17.4%)	12/148	8.1 (4.3-13.7%)
No	478/6210	7.7 (7.0-8.4%)	242/3077	7.9 (6.9-8.9%)	236/3133	7.5 (6.6-8.5%)
<i>P for difference</i>		0.115		0.064		0.795

Household air pollution						
Yes	424/4551	9.3 (8.5-10.2%)	214/2156	9.9 (8.7-11.3%)	210/2395	8.8 (7.7-10.0%)
No	87/1986	4.4 (3.5-5.4%)	49/1100	4.5 (3.3-5.8%)	38/886	4.3 (3.1-5.8%)
<i>P for difference</i>		<0.001		<0.001		<0.001
Occupational exposure						
Yes	62/668	9.3 (7.2-11.7%)	35/312	11.2 (7.9-15.3%)	27/356	7.6 (5.1-10.8%)
No	431/5656	7.6 (6.9-8.3%)	222/2857	7.8 (6.8-8.8%)	209/2799	7.5 (6.5-8.5%)
<i>P for difference</i>		0.129		0.034		0.936
History of asthma						
Yes	24/203	11.8 (7.7-17.1%)	9/78	11.5 (5.5-20.8%)	15/125	12.0 (6.9-19.0%)
No	487/6334	7.7 (7.0-8.4%)	254/3178	8.0 (7.1-9.0%)	233/3156	7.4 (6.5-8.4%)
<i>P for difference</i>		0.030		0.256		0.055
SAD						
Yes	426/2233	19.1 (17.5-20.8%)	210/987	21.3 (18.8-24.0%)	216/1246	17.3 (15.3-19.6%)
No	80/4241	1.9 (1.5-2.3%)	51/2243	2.3 (1.7-3.0%)	29/1998	1.5 (1.0-2.1%)
<i>P for difference</i>		<0.001		<0.001		<0.001

BMI: Body mass index. TB: Tuberculosis. SAD: Small airway dysfunction.

e-Figure 2: Prevalence of COPD using lower limit of normal by sex and age group.



The bar lines indicate 95% CIs.

e-Table 3. The distributions of symptoms by COPD grades.

	GOLD I (n=199)	GOLD II (n=264)	GOLD III-IV (n=48)	Total (n=511)
Respiratory symptoms				
Cough	18 (9.1%)	25 (9.5%)	3 (6.2%)	46 (9.1%)
Sputum	17 (8.6%)	25 (9.5%)	4 (8.3%)	46 (9.1%)
Recurrent wheezing	6 (3.0%)	10 (3.8%)	2 (4.2%)	18 (3.5%)
Apnea	46 (23.4%)	33 (12.5%)	8 (16.7%)	87 (17.1%)
At least one of the above	58 (29.1%)	59 (22.3%)	9 (18.8%)	126 (24.7%)
CAT score				
<10	53 (26.9%)	63 (24.0%)	12 (25.0%)	128 (25.2%)
≥10	144 (73.1%)	200 (76.0%)	36 (75.0%)	380 (74.8%)

Data are expressed as the number (%). GOLD: Global initiative for chronic obstructive pulmonary disease. CAT: COPD assessment test.

e-Table 4. Adjusted OR (95%CI) for young COPD by multiplicative interaction analysis of ozone and HAP.

	OR* (95% CI) of young COPD	p-value for the interaction
O ₃ -high HAP=yes	1.26 (0.76-2.07)	0.367

COPD: Chronic obstructive pulmonary disease. HAP: Household air pollution. O₃: Ozone. OR: Odds ratio. CI: Confidence interval.

*We controlled for age, sex, BMI and education plus history of asthma, history of TB and environmental exposures (smoking status, and occupational exposure).