

Associations between lifestyle habits, environmental factors and respiratory diseases: a cross-sectional study from southwest China

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Table S1 2024.2-2024.5 Basic information of personal habits and diseases of permanent residents in a certain area

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)
			Acute(n=782)	Chronic(n=238)	Other(n=71)	
Mask, n(%)						
No wear	2120 (59.70)	635 (66.42)	506 (64.71)	175 (73.53)	44 (61.97)	2755 (61.13)
1~2 Days / week	825 (23.23)	196 (20.50)	169 (21.61)	36 (15.13)	15 (21.13)	1021 (22.65)
3~4 Days / week	316 (8.90)	72 (7.53)	59 (7.54)	16 (6.72)	11 (15.49)	388 (8.61)
> 5 Days / week	290 (8.17)	53 (5.54)	48 (6.14)	11 (4.62)	1 (1.41)	343 (7.61)
P-value	<0.0001		0.005	<0.0001	0.053	
Smoke, n(%)						
Never smoke	2945 (82.93)	324 (33.89)	295 (37.72)	48 (20.17)	12 (16.90)	3269 (72.53)
Former smoker	344 (9.69)	321 (33.58)	253 (32.35)	88 (36.97)	26 (36.62)	665 (14.75)
Now smoker	262 (7.38)	311 (32.53)	234 (29.92)	102 (42.86)	33 (46.48)	573 (12.71)
P-value	<0.0001		<0.0001	<0.0001	<0.0001	
Smoke Number, n(%)						
0 Never smoke	2945 (82.93)	324 (33.89)	295 (37.72)	48 (20.17)	12 (16.90)	3269 (72.53)
<10 cigarettes/day	363 (10.22)	193 (20.19)	148 (18.93)	57 (23.95)	19 (26.76)	556 (12.34)
10~19 cigarettes/day	203 (5.72)	262 (27.41)	200 (25.58)	83 (34.87)	19 (26.76)	465 (10.32)
>20 cigarettes/day	40 (1.13)	177 (18.51)	139 (17.77)	50 (21.01)	21 (29.58)	217 (4.81)
P-value	<0.0001		<0.0001	<0.0001	<0.0001	
Psmoke, n(%)						
No exposed	2144 (60.38)	221 (23.12)	190 (24.30)	45 (18.91)	17 (23.94)	2365 (52.47)
1~2 Days / week	1074 (30.25)	410 (42.89)	341 (43.61)	102 (42.86)	29 (40.85)	1484 (32.93)
3~4 Days / week	266 (7.49)	223 (23.33)	174 (22.25)	59 (24.79)	15 (21.13)	489 (10.85)
Daily exposure	67 (1.89)	102 (10.67)	77 (9.85)	32 (13.45)	10 (14.08)	169 (3.75)
P-value	<0.0001		<0.0001	<0.0001	<0.0001	
Drink, n(%)						
No drinking	2795 (78.71)	518 (54.18)	508 (64.96)	127 (53.36)	34 (47.89)	3313 (73.51)
Light drinking(1 time/week)	632 (17.80)	233 (24.37)	206 (26.34)	79 (33.19)	24 (33.80)	865 (19.19)
Moderate drinking(2~3times/week)	110 (3.10)	123 (12.87)	58 (7.42)	22 (9.24)	7 (9.86)	233 (5.17)
Heavy drinking(4~times/week)	14 (0.39)	82 (8.58)	10 (1.28)	10 (4.20)	6 (8.45)	96 (2.13)
P-value	<0.0001		<0.0001	<0.0001	0.701	
Sport, n(%)						
Never exercise	1186 (33.40)	412 (43.10)	320 (40.92)	117 (49.16)	28 (39.44)	1598 (35.46)

	Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)
				Acute(n=782)	Chronic(n=238)	Other(n=71)	
Fd, n(%)	1~2 Days / week	1407 (39.62)	375 (39.23)	322 (41.18)	84 (35.29)	25 (35.21)	1782 (39.54)
	3~4 Days / week	523 (14.73)	116 (12.13)	98 (12.53)	22 (9.24)	12 (16.90)	639 (14.18)
	> 5 Days / week	435 (12.25)	53 (5.54)	42 (5.37)	15 (6.30)	6 (8.45)	488 (10.83)
	<i>P</i> -value		<0.0001	<0.0001	<0.0001	0.011	
Tod, n(%)	taste is light	809 (22.78)	229 (23.95)	191 (24.42)	58 (24.37)	19 (26.76)	1038 (23.03)
	taste is balance	2464 (69.39)	596 (62.34)	494 (63.17)	133 (55.88)	39 (54.93)	3060 (67.89)
	tastet is salty	278 (7.83)	131 (13.70)	97 (12.40)	47 (19.75)	13 (18.31)	409 (9.07)
	<i>P</i> -value		<0.0001	<0.0001	<0.0001	<0.0001	
	mainly vegetarian	503 (14.17)	163 (17.05)	132 (16.88)	45 (18.91)	14 (19.72)	666 (14.78)
	balanced diet	2614 (73.61)	607 (63.49)	503 (64.32)	141 (59.24)	40 (56.34)	3221 (71.47)
	mainly meat	434 (12.22)	186 (19.46)	147 (18.80)	52 (21.85)	17 (23.94)	620 (13.76)
	<i>P</i> -value		<0.0001	<0.0001	<0.0001	0.011	

Psmoke:passive smoke ; FD: food taste; Tod:type of diet

Table S2 2024.2-2024.5 Basic information of indoor environmental factors and diseases of permanent residents in a certain

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)
			Acute(n=782)	Chronic(n=238)	Other(n=71)	
Ventilation, n(%)						
No ventilated	261 (7.35)	118 (12.34)	99 (12.66)	30 (12.61)	13 (18.31)	379 (8.41)
1~2 days / week	1007 (28.36)	271 (28.35)	220 (28.13)	74 (31.09)	16 (22.54)	1278 (28.36)
3~4 days / week	721 (20.30)	197 (20.61)	160 (20.46)	48 (20.17)	16 (22.54)	918 (20.37)
> 5 days / week	1562 (43.99)	370 (38.70)	303 (38.75)	86 (36.13)	26 (36.62)	1932 (42.87)
P-value	<0.0001		<0.0001	0.035	0.018	
Lighting, n(%)						
Insufficient lighting	273 (7.69)	129 (13.49)	104 (13.30)	31 (13.03)	11 (15.49)	402 (8.92)
Good lighting	3278 (92.31)	827 (86.51)	678 (86.70)	207 (86.97)	60 (84.51)	4105 (91.08)
P-value	<0.0001		<0.0001	0.022	0.05	
Clearance, n(%)						
No clearance	1969 (55.45)	667 (69.77)	532 (68.03)	177 (74.37)	44 (61.97)	2636 (58.49)
1~2 times / month	1195 (33.65)	224 (23.43)	192 (24.55)	44 (18.49)	20 (28.17)	1419 (31.48)
3~4 times / month	258 (7.27)	45 (4.71)	40 (5.12)	11 (4.62)	5 (7.04)	303 (6.72)
> 5 times / month	129 (3.63)	20 (2.09)	18 (2.30)	6 (2.52)	2 (2.82)	149 (3.31)
P-value	<0.0001		<0.0001	<0.0001	0.956	
Oil Fumes, n(%)						
No oil fume	1314 (37.00)	220 (23.01)	184 (23.53)	51 (21.43)	14 (19.72)	1534 (34.04)
Light oil smoke(does not affect the living environment)	2102 (59.19)	620 (64.85)	508 (64.96)	151 (63.45)	40 (56.34)	2722 (60.39)
Moderate oil smoke(causing discomfort)	121 (3.41)	97 (10.15)	75 (9.59)	29 (12.18)	11 (15.49)	218 (4.84)
Heavy oil smoke(Affect the living environment and health)	14 (0.39)	19 (1.99)	15 (1.92)	7 (2.94)	6 (8.45)	33 (0.73)
P-value	<0.0001		<0.0001	<0.0001	<0.0001	
Fluffy Product, n(%)						
No use fluffy Product	1662 (46.80)	324 (33.89)	257 (32.86)	89 (37.39)	30 (42.25)	1986 (44.06)
Small use fluffy Product(or 1 Day / week)	1211 (34.10)	383 (40.06)	320 (40.92)	92 (38.66)	23 (32.39)	1594 (35.37)
Moderate use fluffy Product(or 2~3 Days / week)	555 (15.63)	187 (19.56)	151 (19.31)	48 (20.17)	12 (16.90)	742 (16.46)
Large use fluffy Product(or > 4 Days / week)	123 (3.46)	62 (6.49)	54 (6.91)	9 (3.78)	6 (8.45)	185 (4.10)
P-value	<0.0001		<0.0001	0.003	0.106	
Cook, n(%)						
Never cooking	1316 (37.06)	266 (27.82)	225 (28.77)	54 (22.69)	17 (23.94)	1582 (35.10)
1~2 days / week	1017 (28.64)	302 (31.59)	249 (31.84)	76 (31.93)	28 (39.44)	1319 (29.27)

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)
			Acute(n=782)	Chronic(n=238)	Other(n=71)	
3~4 days / week	470 (13.24)	151 (15.79)	125 (15.98)	44 (18.49)	10 (14.08)	621 (13.78)
> 5 days / week	748 (21.06)	237 (24.79)	183 (23.40)	64 (26.89)	16 (22.54)	985 (21.85)
P-value	<0.0001		<0.0001	<0.0001	0.163	
Dm, n(%)						
No	3317 (93.41)	799 (83.58)	652 (83.38)	189 (79.41)	64 (90.14)	4116 (91.32)
Yes	234 (6.59)	157 (16.42)	130 (16.62)	49 (20.59)	7 (9.86)	391 (8.68)
P-value	<0.0001		<0.0001	<0.0001	0.721	
Air Condition, n(%)						
No use air-condition	600 (16.90)	200 (20.92)	149 (19.05)	69 (28.99)	22 (30.99)	800 (17.75)
1~2 days / week	863 (24.30)	215 (22.49)	169 (21.61)	59 (24.79)	26 (36.62)	1078 (23.92)
3~4 days / week	926 (26.08)	246 (25.73)	209 (26.73)	54 (22.69)	13 (18.31)	1172 (26.00)
> 5 days / week	1162 (32.72)	295 (30.86)	255 (32.61)	56 (23.53)	10 (14.08)	1457 (32.33)
P-value	0.033		0.358	<0.0001	0.002	
Heating, n(%)						
No	3331 (93.80)	870 (91.00)	703 (89.90)	219 (92.02)	64 (90.14)	4201 (93.21)
Yes	220 (6.20)	86 (9.00)	79 (10.10)	19 (7.98)	7 (9.86)	306 (6.79)
P-value	0.002		<0.0001	0.452	0.425	
Uheating, n(%)						
No	3477 (97.92)	932 (97.49)	759 (97.06)	231 (97.06)	67 (94.37)	4409 (97.83)
Yes	74 (2.08)	24 (2.51)	23 (2.94)	7 (2.94)	4 (5.63)	98 (2.17)
P-value	0.422		0.106	0.405	0.109	
Charcoal Fire, n(%)						
No	3464 (97.55)	915 (95.71)	754 (96.42)	226 (94.96)	63 (88.73)	4379 (97.16)
Yes	87 (2.45)	41 (4.29)	28 (3.58)	12 (5.04)	8 (11.27)	128 (2.84)
P-value	0.002		0.170	0.036	<0.0001	
Electric, n(%)						
No	2862 (80.60)	762 (79.71)	630 (80.56)	189 (79.41)	49 (69.01)	3624 (80.41)
Yes	689 (19.40)	194 (20.29)	152 (19.44)	49 (20.59)	22 (30.99)	883 (19.59)
P-value	0.538		0.905	0.691	0.015	
Pet, n(%)						
No	1146 (32.27)	335 (35.04)	267 (34.14)	90 (37.82)	18 (25.35)	1481 (32.86)
Yes	2405 (67.73)	621 (64.96)	515 (65.86)	148 (62.18)	53 (74.65)	3026 (67.14)
P-value	<0.0001		0.401	0.094	0.175	

coal , n(%)							
No	3427 (96.51)	933 (97.59)	759 (97.06)	236 (99.16)	69 (97.18)	4360 (96.74)	
Yes	124 (3.49)	23 (2.41)	23 (2.94)	2 (0.84)	2 (2.82)	147 (3.26)	
<i>P</i> -value	0.093		0.579	0.031	1.000		
Natural Gas, n(%)							
No	652 (18.36)	212 (22.18)	166 (21.23)	65 (27.31)	21 (29.58)	864 (19.17)	
Yes	2899 (81.64)	744 (77.82)	616 (78.77)	173 (72.69)	50 (70.42)	3643 (80.83)	
<i>P</i> -value	0.008		0.108	0.001	0.025		
Electricity, n(%)							
No	2409 (67.84)	650 (67.99)	533 (68.16)	151 (63.45)	42 (59.15)	3059 (67.87)	
Yes	1142 (32.16)	306 (32.01)	249 (31.84)	87 (36.55)	29 (40.85)	1448 (32.13)	
<i>P</i> -value	0.929		0.850	0.133	0.133		

Ventilation: natural ventilation or mechanical ventilation; Oil Fumes:cooking oil fumes; air condition: use air condition in summer; Uheating: under heating; Charcoal Fire,Electric: winter heating facilities; cook: personal cooking in five years; coal,natural gas and electricity:type of fuel for cooking; DM: dust mite.

Table S3 2024.2-2024.5 Basic information of outdoor environmental factors and diseases of permanent residents in a certain area

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)
			Acute(n=782)	Chronic(n=238)	Other(n=71)	
Season, n(%)						
cold season	1685 (47.45)	551 (57.64)	449 (57.42)	134 (56.30)	48 (67.61)	2236 (49.61)
warm season	1866 (52.55)	405 (42.36)	333 (42.58)	104 (43.70)	23 (32.39)	2271 (50.39)
P-value	<0.0001		<0.0001	0.034	0.002	
Surrounding, n(%)						
No	3064 (86.29)	672 (70.29)	558 (71.36)	155 (65.13)	50 (70.42)	3736 (82.89)
Yes	487 (13.71)	284 (29.71)	224 (28.64)	83 (34.87)	21 (29.58)	771 (17.11)
P-value	<0.0001		<0.0001	<0.0001	0.005	
Inhalable particles and toxic gases, n(%)						
No	3523 (99.21)	926 (96.86)	754 (96.42)	227 (95.38)	65 (91.55)	4449 (98.71)
Yes	28 (0.79)	30 (3.14)	28 (3.58)	11 (4.62)	6 (8.45)	58 (1.29)
P-value	<0.0001		<0.0001	<0.0001	<0.0001	
Workplace, n(%)						
No	1909 (53.76)	438 (45.82)	352 (45.01)	116 (48.74)	39 (54.93)	2347 (52.07)
Yes	1642 (46.24)	518 (54.18)	430 (54.99)	122 (51.26)	32 (45.07)	2160 (47.93)
P-value	<0.0001		<0.0001	0.290	0.627	

Workplace: whether the workplace is a public place in the last five years. Surrounding: Whether there is a garbage station, factory, traffic main road, etc. within 100m around the residence. Inhalable particles and toxic gases: history of exposure to occupational toxic metals, dust particulate matter and dust fumes and their compounds.

Table S4 2024.2-2024.5 Personal history of respiratory diseases of permanent residents in a certain area

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)	
			Acute(n=782)	Chronic(n=238)	Other(n=71)		
History Of RD, n(%)							
No	3274 (92.20)	415 (43.41)	369 (47.19)	70 (29.41)	37 (52.11)	3689 (81.85)	
Yes	277 (7.80)	541 (56.59)	413 (52.81)	168 (70.59)	34 (47.89)	818 (18.15)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Fourt Phb, n(%)							
No	3298 (92.88)	597 (62.45)	481 (61.51)	140 (58.82)	47 (66.20)	3895 (86.42)	
Yes	253 (7.12)	359 (37.55)	301 (38.49)	98 (41.18)	24 (33.80)	612 (13.58)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Sfod, n(%)							
No	3051 (85.92)	651 (68.10)	568 (72.63)	124 (52.10)	36 (50.70)	3702 (82.14)	
Yes	500 (14.08)	305 (31.90)	214 (27.37)	114 (47.90)	35 (49.30)	805 (17.86)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Hypertension, n(%)							
No	3225 (90.82)	764 (79.92)	649 (82.99)	156 (65.55)	55 (77.46)	3989 (88.51)	
Yes	326 (9.18)	192 (20.08)	133 (17.01)	82 (34.45)	16 (22.54)	518 (11.49)	
P-value	<0.0001		<0.0001	<0.0001	0.003		
Diabetes, n(%)							
No	3422 (96.37)	878 (91.84)	721 (92.20)	210 (88.24)	65 (91.55)	4300 (95.41)	
Yes	129 (3.63)	78 (8.16)	61 (7.80)	28 (11.76)	6 (8.45)	207 (4.59)	
P-value	<0.0001		<0.0001	<0.0001	0.201		
CHD, n(%)							
No	3497 (98.48)	910 (95.19)	750 (95.91)	215 (90.34)	61 (85.92)	4407 (97.78)	
Yes	54 (1.52)	46 (4.81)	32 (4.09)	23 (9.66)	10 (14.08)	100 (2.22)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Arrhythmia, n(%)							
No	3524 (99.24)	917 (95.92)	752 (96.16)	218 (91.60)	61 (85.92)	4441 (98.54)	
Yes	27 (0.76)	39 (4.08)	30 (3.84)	20 (8.40)	10 (14.08)	66 (1.46)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Arteriosclerosis, n(%)							
No	3512 (98.90)	907 (94.87)	744 (95.14)	214 (89.92)	63 (88.73)	4419 (98.05)	
Yes	39 (1.10)	49 (5.13)	38 (4.86)	24 (10.08)	8 (11.27)	88 (1.95)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)
			Acute(n=782)	Chronic(n=238)	Other(n=71)	
cough , n(%)						
No expectoration	2954 (83.19)	490 (51.26)	432 (55.24)	86 (36.13)	33 (46.48)	3444 (76.41)
1-5 times / day	536 (15.09)	368 (38.49)	284 (36.32)	102 (42.86)	26 (36.62)	904 (20.06)
6-9 times / day	39 (1.10)	58 (6.07)	35 (4.48)	35 (14.71)	5 (7.04)	97 (2.15)
> 10 times / day	22 (0.62)	40 (4.18)	31 (3.96)	15 (6.30)	7 (9.86)	62 (1.38)
<i>P</i> -value		<0.0001	<0.0001	<0.0001	<0.0001	
Allergy history, n(%)						
No	3234 (91.07)	598 (62.55)	488 (62.40)	157 (65.97)	40 (56.34)	3832 (85.02)
Yes	317 (8.93)	358 (37.45)	294 (37.60)	81 (34.03)	31 (43.66)	675 (14.98)
<i>P</i> -value		<0.0001	<0.0001	<0.0001	<0.0001	

Fourt Phb: Whether there is hospitalized for severe respiratory diseases such as pneumonia and bronchitis before the age of 14 years; sfod: suffer from other disease. X_f: Family history of X. Emotion, stress, sleep: The survey period was within 5 years.

Table S5 2024.2-2024.5 Personal history of family history of permanent residents in a certain area

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)	
			Acute(n=782)	Chronic(n=238)	Other(n=71)		
COPD f, n(%)							
No	3366 (94.79)	672 (70.29)	560 (71.61)	147 (61.76)	43 (60.56)	4038 (89.59)	
Yes	185 (5.21)	284 (29.71)	222 (28.39)	91 (38.24)	28 (39.44)	469 (10.41)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Bronchitis f, n(%)							
No	3269 (92.06)	673 (70.40)	555 (70.97)	140 (58.82)	49 (69.01)	3942 (87.46)	
Yes	282 (7.94)	283 (29.60)	227 (29.03)	98 (41.18)	22 (30.99)	565 (12.54)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Asthma f, n(%)							
No	3481 (98.03)	657 (68.72)	560 (71.61)	134 (56.30)	42 (59.15)	4138 (91.81)	
Yes	70 (1.97)	299 (31.28)	222 (28.39)	104 (43.70)	29 (40.85)	369 (8.19)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Lung fibrosis f, n(%)							
No	3534 (99.52)	864 (90.38)	706 (90.28)	210 (88.24)	60 (84.51)	4398 (97.58)	
Yes	17 (0.48)	92 (9.62)	76 (9.72)	28 (11.76)	11 (15.49)	109 (2.42)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
Pulmonary hypertension f, n(%)							
No	3541 (99.72)	936 (97.91)	765 (97.83)	228 (95.80)	65 (91.55)	4477 (99.33)	
Yes	10 (0.28)	20 (2.09)	17 (2.17)	10 (4.20)	6 (8.45)	30 (0.67)	
P-value	<0.0001		<0.0001	<0.0001	<0.0001		
CHD f, n(%)							
No	3413 (96.11)	891 (93.20)	735 (93.99)	211 (88.66)	57 (80.28)	4304 (95.50)	
Yes	138 (3.89)	65 (6.80)	47 (6.01)	27 (11.34)	14 (19.72)	203 (4.50)	
P-value	<0.0001		0.025	<0.0001	<0.0001		
Hypertensive f, n(%)							
No	2990 (84.20)	744 (77.82)	610 (78.01)	170 (71.43)	50 (70.42)	3734 (82.85)	
Yes	561 (15.80)	212 (22.18)	172 (21.99)	68 (28.57)	21 (29.58)	773 (17.15)	
P-value	<0.0001		<0.0001	<0.0001	0.005		
Arrhythmia f, n(%)							
No	3498 (98.51)	924 (96.65)	761 (97.31)	224 (94.12)	58 (81.69)	4422 (98.11)	
Yes	53 (1.49)	32 (3.35)	21 (2.69)	14 (5.88)	13 (18.31)	85 (1.89)	
P-value	<0.0001		0.071	<0.0001	<0.0001		

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)
			Acute(n=782)	Chronic(n=238)	Other(n=71)	
Diabetes f, n(%)						
No	3291 (92.68)	860 (89.96)	706 (90.28)	208 (87.39)	57 (80.28)	4151 (92.10)
Yes	260 (7.32)	96 (10.04)	76 (9.72)	30 (12.61)	14 (19.72)	356 (7.90)
<i>P</i> -value		0.006	0.038	<0.0001	<0.0001	

Table S6 2024.2-2024.5 Personal history of other basic factors and diseases of permanent residents in a

certain area

Variables	Not sick (n = 3551)	Sicken (n = 956)	Sicken			Total (n = 4507)
			Acute(n=782)	Chronic(n=238)	Other(n=71)	
Emotion, n(%)						
Never mad	1302 (36.67)	197 (20.61)	159 (20.33)	38 (15.97)	22 (30.99)	1499 (33.26)
1~2 times / week	1940 (54.63)	585 (61.19)	476 (60.87)	156 (65.55)	37 (52.11)	2525 (56.02)
3~5 times / week	228 (6.42)	120 (12.55)	105 (13.43)	30 (12.61)	4 (5.63)	348 (7.72)
> 5 times / week	81 (2.28)	54 (5.65)	42 (5.37)	14 (5.88)	8 (11.27)	135 (3.00)
<i>P</i> -value		<0.0001	<0.0001	<0.0001	<0.0001	
Stress, n(%)						
No stress	1616 (45.51)	318 (33.26)	258 (32.99)	79 (33.19)	24 (33.80)	1934 (42.91)
1~2 times / month	1226 (34.53)	362 (37.87)	288 (36.83)	93 (39.08)	22 (30.99)	1588 (35.23)
3~5 times / month	398 (11.21)	133 (13.91)	121 (15.47)	26 (10.92)	11 (15.49)	531 (11.78)
> 5 times / month	311 (8.76)	143 (14.96)	115 (14.71)	40 (16.81)	14 (19.72)	454 (10.07)
<i>P</i> -value		<0.0001	<0.0001	<0.0001	<0.0001	
Sleep, n(%)						
Never insomnia	1786 (50.30)	310 (32.43)	270 (34.53)	58 (24.37)	18 (25.35)	2096 (46.51)
1~2 times / week	1443 (40.64)	472 (49.37)	372 (47.57)	129 (54.20)	34 (47.89)	1915 (42.49)
3~5 times / week	195 (5.49)	114 (11.92)	93 (11.89)	33 (13.87)	6 (8.45)	309 (6.86)
> 5 times / week	127 (3.58)	60 (6.28)	47 (6.01)	18 (7.56)	13 (18.31)	187 (4.15)
<i>P</i> -value		<0.0001	<0.0001	0.006	<0.0001	

Table S7 2024.2-2024.5 Factors influencing respiratory diseases of permanent residents in a region
were selected by lasso regression

Number	Variable	Coef
1	Season	-0.298184104
2	Sex	0.408676997
3	Age_group	0.0989067988
4	Education	-0.080967878
5	Occupation	-0.066348982
6	Mask	-0.018650676
7	Smoke	0.248801692
8	Smoke_number	0.835692602
9	Psmoke	0.492089122
10	Drink	0.386535456
11	Sport	-0.131040890
12	FD	-0.210895732
13	TOD	-0.122314656
14	History_of_RD	1.5641082949
15	fourt_phb	1.762982525
16	CHD	0.553816336
17	Cough	0.403391585
18	Ventilation	-0.139243589
19	Lighting	-0.195691085
20	Oil_fumes	0.012831927
21	Air_condition	-0.070108310
22	Fluffy_product	0.009743838
23	Natural_gas	-0.016131941
24	Inhalable particles and toxic gases	0.242109996
25	DM	0.439492020
26	Emotion	0.094001510
27	Stress	-0.027036587
28	Sleep	0.1707293725
29	Allergy_history	1.376558987
30	COPD_f	0.602359777
31	Bronchitis_f	0.631802172
32	Asthma_f	1.779691711
33	Lung_fibrosis_f	0.044861502
34	CHD_f	-0.224813015

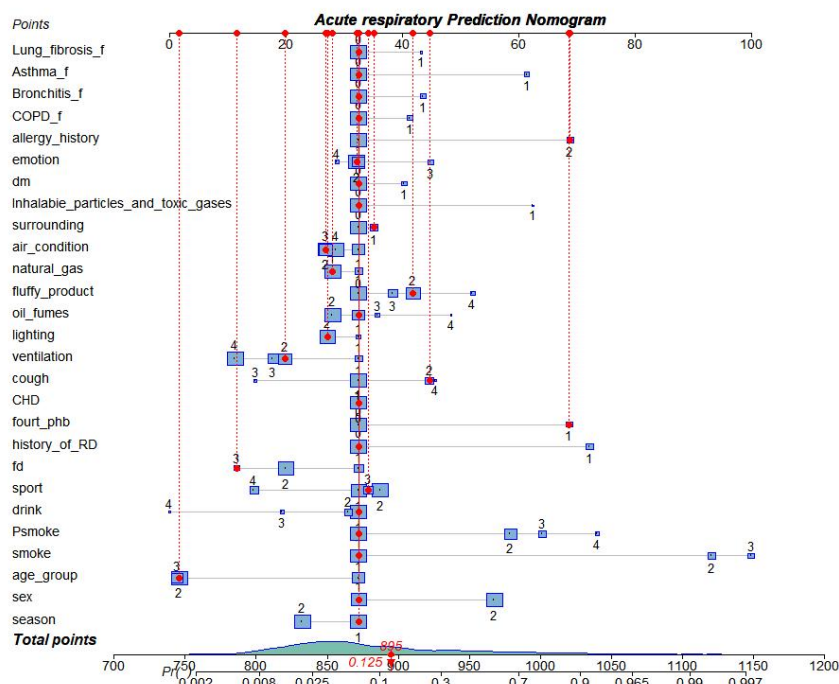


Figure S1 nomogram of predicted acute respiratory disease risk established after lasso-logistic regression analysis

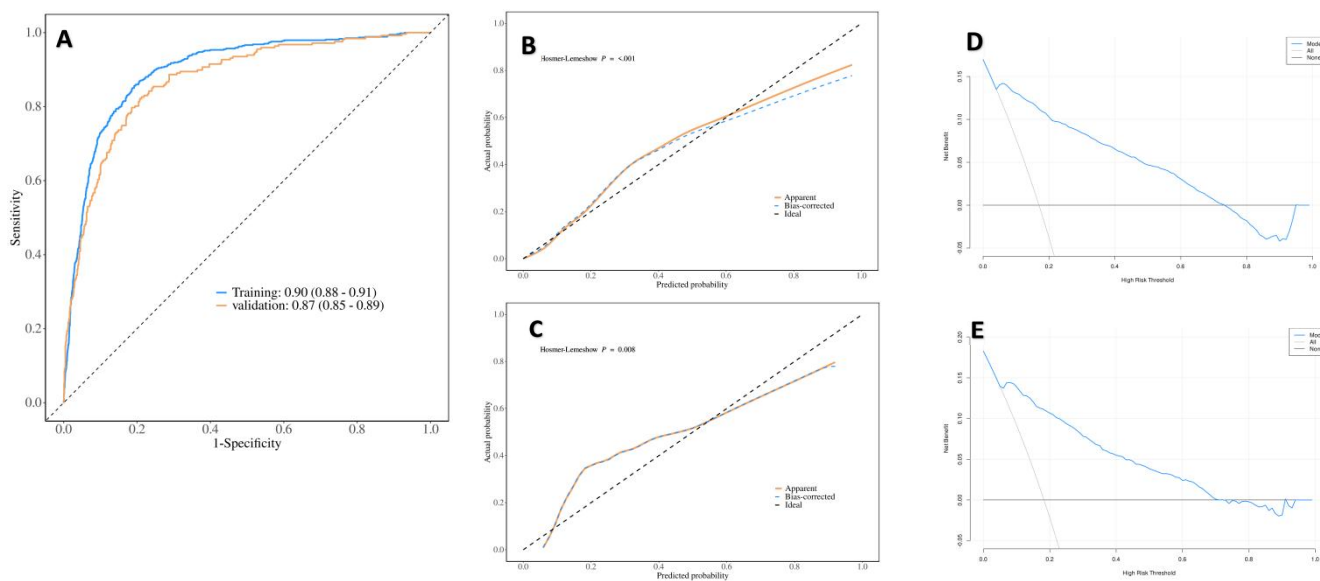


Figure S2 ROC curve and AUC of the area under the curve of the training set and validation set in the nomogram for predicting acute respiratory diseases, calibration curve H-L and clinical decision curve DCA

Table S8Results of the confusion matrix for the nomogram for predicting acute respiratory diseases

Data	AUC (95%CI)	Accuracy (95%CI)	Sensitivity (95%CI)	Specificity (95%CI)	PPV (95%CI)	NPV (95%CI)	cut off
Train	0.897 (0.882-0.911)	0.816 (0.802-0.829)	0.808 (0.793 - 0.823)	0.856 (0.826 - 0.886)	0.965 (0.957 - 0.973)	0.477 (0.445 - 0.508)	0.148
Test	0.870 (0.845-0.895)	0.803 (0.781-0.824)	0.804 (0.780 - 0.827)	0.802 (0.752 - 0.851)	0.948 (0.934 - 0.962)	0.477 (0.429 - 0.525)	0.148

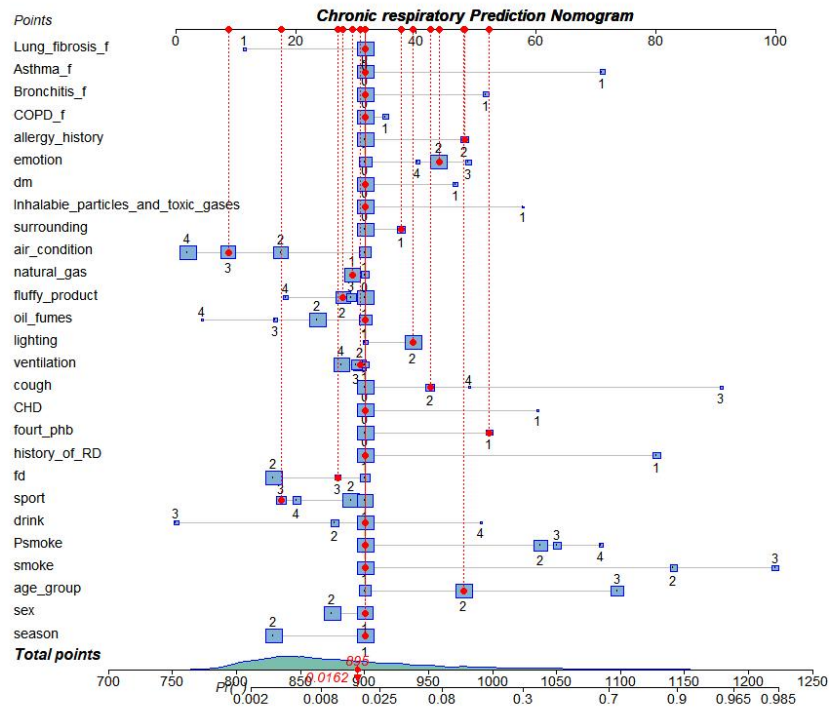


Figure S3 nomogram of predicted chronic respiratory disease risk established after lasso-logistic regression analysis

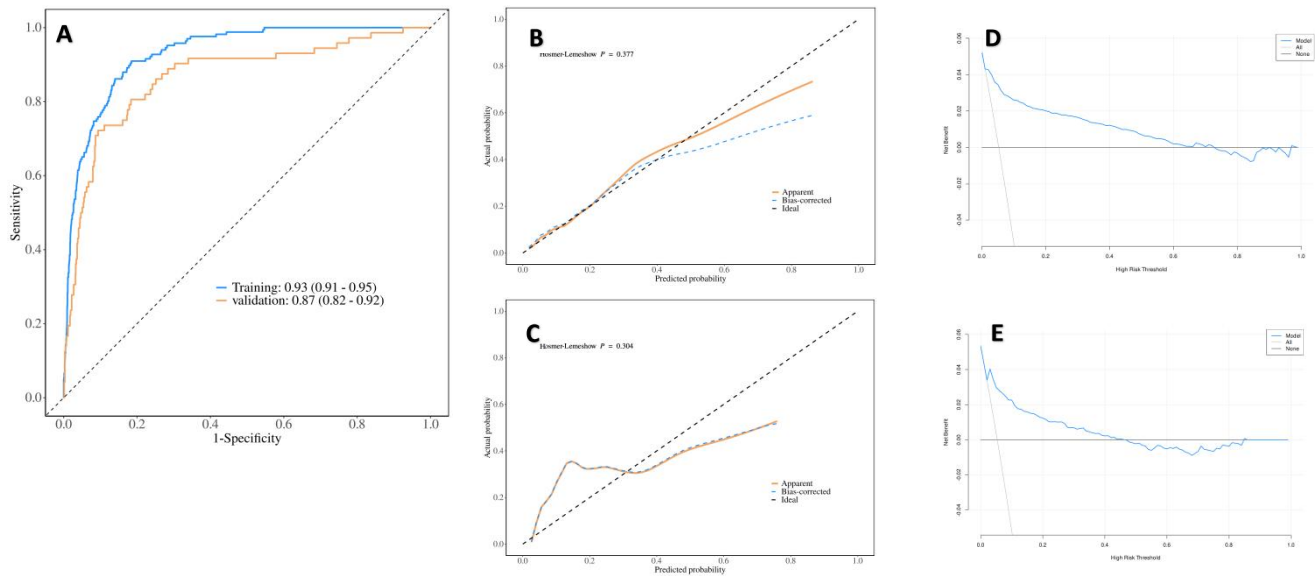


Figure S4 ROC curve and AUC of the area under the curve of the training set and validation set in the nomogram for predicting chronic respiratory diseases, calibration curve H-L and clinical decision curve DCA

Table S9 Results of the confusion matrix for the nomogram for predicting chronic respiratory diseases

Data	AUC (95%CI)	Accuracy (95%CI)	Sensitivity (95%CI)	Specificity (95%CI)	PPV (95%CI)	NPV (95%CI)	cut off
Train	0.930 (0.914-0.947)	0.819 (0.805-0.833)	0.814 (0.800 - 0.828)	0.910 (0.866 - 0.953)	0.994 (0.991 - 0.997)	0.214 (0.184 - 0.244)	0.041
Test	0.866 (0.817-0.915)	0.814 (0.793-0.835)	0.815 (0.794 - 0.836)	0.806 (0.714 - 0.897)	0.987 (0.980 - 0.994)	0.197 (0.151 - 0.242)	0.041

Table S10 Subgroup interaction sheet between gender and lifestyle factors

characteristic	Overall disease		Acute disease		Chronic disease		Other disease	
	OR(95%CI)	P for interaction	OR(95%CI)	P for interaction	OR(95%CI)	P for interaction	OR(95%CI)	P for interaction
fd		0.357				0.103		0.018
sex.1_fd.1	Ref		Ref		Ref		Ref	
sex.2_fd.1	1.03(0.75,1.40)		1.90(1.30,2.77)***		1.08(0.61,1.93)		1.67(0.64,4.37)	
sex.1_fd.2	0.99(0.75,1.29)		0.54(0.38,0.75)***		0.54(0.34,0.88)*		0.73(0.32,1.64)	
sex.2_fd.2	0.82(0.62,1.07)		1.36(0.97,1.91)		0.50(0.30,0.85)*		0.38(0.13,1.09)	
sex.1_fd.3	1.79(1.25,2.57)***		0.63(0.40,0.99)*		0.69(0.38,1.26)		0.60(0.20,1.78)	
sex.2_fd.3	1.29(0.85,1.97)		1.37(0.82,2.29)		1.54(0.76,3.10)		2.15(0.69,6.70)	

Table S11 Subgroup interaction sheet between age group and lifestyle factors

characteristic	Overall disease		Acute disease		Chronic disease		Other disease	
	OR(95%CI)	P for interaction	OR(95%CI)	P for interaction	OR(95%CI)	P for interaction	OR(95%CI)	P for interaction
fd		0.273		0.903				0.225
age_group.1_fd.1	Ref		Ref		Ref		Ref	
age_group.2_fd.1	1.24(0.72,2.12)		0.54(0.34,0.84)**		1.41(0.40,4.97)		3188165.83(0.00,Inf)	
age_group.3_fd.1	1.52(0.87,2.68)		0.55(0.34,0.90)**		4.14(1.21,14.13)*		1555650.56(0.00,Inf)	
age_group.1_fd.2	0.80(0.54,1.17)		0.65(0.43,0.99)*		0.73(0.19,2.82)		304045.82(0.00,Inf)	
age_group.2_fd.2	0.98(0.59,1.63)		0.29(0.19,0.44)***		0.66(0.20,2.23)		1101341.75(0.00,Inf)	
age_group.3_fd.2	1.71(1.00,2.91)*		0.37(0.24,0.58)***		2.60(0.78,8.69)		1317814.54(0.00,Inf)	
age_group.1_fd.3	1.43(0.70,2.89)		0.65(0.29,1.47)		0.00(0.00,Inf)		1983716.74(0.00,Inf)	
age_group.2_fd.3	1.48(0.83,2.65)		0.32(0.19,0.55)***		1.87(0.52,6.72)		1200071.25(0.00,Inf)	
age_group.3_fd.3	3.28(1.78,6.02)***		0.40(0.23,0.72)**		2.87(0.80,10.33)		2172324.32(0.00,Inf)	

Table S12 Subgroup interaction sheet between gender and environmental factors

characteristic	Overall disease			Acute disease			Chronic disease			Other disease		
	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction
lighting			0.84			0.845			0.255			0.839
sex.1_lighting.1	Ref			Ref			Ref			Ref		
sex.2_lighting.1	0.82(0.53,1.27)	0.377		1.04(0.65,1.68)	0.863		0.84(0.37,1.90)	0.68		0.62(0.15,2.59)	0.51	
sex.1_lighting.2	0.54(0.39,0.73)	<0.001		0.71(0.49,1.03)	0.068		1.28(0.71,2.30)	0.414		1.32(0.50,3.48)	0.577	
sex.2_lighting.2	0.46(0.34,0.63)	<0.001		0.77(0.53,1.12)	0.179		0.65(0.35,1.19)	0.162		0.69(0.25,1.93)	0.482	
ventilation			0.043			0.129			0.028			0.678
sex.1_ventilation.1	Ref			Ref			Ref			Ref		
sex.2_ventilation.1	0.99(0.63,1.55)	0.96		1.12(0.69,1.83)	0.646		1.26(0.56,2.81)	0.577		0.77(0.21,2.79)	0.696	
sex.1_ventilation.2	0.71(0.50,1.01)	0.057		0.73(0.48,1.10)	0.132		1.37(0.71,2.63)	0.348		0.56(0.20,1.56)	0.265	
sex.2_ventilation.2	0.46(0.32,0.67)	<0.001		0.59(0.39,0.89)	0.013		0.41(0.19,0.87)	0.021		0.18(0.05,0.69)	0.012	
sex.1_ventilation.3	0.58(0.40,0.85)	0.005		0.57(0.37,0.90)	0.016		1.03(0.50,2.11)	0.941		0.74(0.25,2.18)	0.588	
sex.2_ventilation.3	0.62(0.43,0.91)	<0.001		0.74(0.48,1.16)	0.189		0.62(0.29,1.34)	0.225		0.32(0.09,1.15)	0.082	
sex.1_ventilation.4	0.53(0.37,0.76)	<0.001		0.50(0.33,0.76)	0.001		0.93(0.47,1.84)	0.836		0.55(0.19,1.57)	0.264	
sex.2_ventilation.4	0.48(0.34,0.68)	<0.001		0.62(0.41,0.93)	0.02		0.56(0.28,1.13)	0.104		0.38(0.13,1.12)	0.079	
air_condition			0.431			0.466			0.583			0.011
sex.1_air_condition.1	Ref			Ref			Ref			Ref		
sex.2_air_condition.1	0.68(0.49,0.94)	0.022		0.94(0.65,1.36)	0.74		0.42(0.24,0.73)	0.002		0.16(0.05,0.56)	0.004	
sex.1_air_condition.2	0.73(0.54,1.00)	0.048		0.69(0.48,0.99)	0.045		0.55(0.34,0.87)	0.012		0.69(0.33,1.44)	0.327	
sex.2_air_condition.2	0.62(0.46,0.85)	0.003		0.79(0.55,1.13)	0.202		0.26(0.14,0.46)	<0.001		0.43(0.18,1.02)	0.056	
sex.1_air_condition.3	0.79(0.58,1.07)	0.13		0.81(0.57,1.15)	0.243		0.37(0.22,0.61)	<0.001		0.12(0.04,0.37)	<0.001	
sex.2_air_condition.3	0.68(0.50,0.92)	0.011		0.78(0.55,1.11)	0.167		0.23(0.13,0.40)	<0.001		0.27(0.11,0.65)	0.004	
sex.1_air_condition.4	0.70(0.51,0.94)	0.019		0.71(0.50,1.01)	0.054		0.32(0.19,0.54)	<0.001		0.21(0.08,0.53)	0.001	
sex.2_air_condition.4	0.68(0.50,0.90)	0.008		0.91(0.65,1.26)	0.563		0.22(0.13,0.37)	<0.001		0.07(0.02,0.27)	<0.001	
fluffy_product			0.034			0.495			0.135			0.601
sex.1_fluffy_product.1	Ref			Ref			Ref			Ref		
sex.2_fluffy_product.1	0.81(0.63,1.04)	0.093		1.13(0.86,1.48)	0.387		0.61(0.38,0.96)	0.033		0.65(0.30,1.43)	0.284	
sex.1_fluffy_product.2	1.47(1.16,1.86)	0.002		1.55(1.18,2.04)	0.002		1.28(0.85,1.93)	0.232		1.20(0.60,2.41)	0.609	
sex.2_fluffy_product.2	1.43(1.13,1.80)	0.003		1.87(1.44,2.44)	<0.001		0.80(0.51,1.26)	0.341		0.40(0.15,1.04)	0.061	
sex.1_fluffy_product.3	2.20(1.63,2.98)	<0.001		1.73(1.22,2.44)	0.002		1.98(1.22,3.19)	0.005		1.02(0.38,2.69)	0.972	
sex.2_fluffy_product.3	1.26(0.94,1.69)	0.116		1.55(1.13,2.14)	0.007		0.55(0.29,1.02)	0.058		0.86(0.33,2.25)	0.754	
sex.1_fluffy_product.4	3.29(1.96,5.51)	<0.001		2.95(1.69,5.15)	<0.001		0.78(0.26,2.30)	0.649		2.63(0.74,9.37)	0.135	
sex.2_fluffy_product.4	1.94(1.24,3.03)	0.004		2.41(1.49,3.90)	<0.001		0.74(0.28,1.95)	0.543		1.14(0.25,5.26)	0.862	

oil_fumes		0.037			0.044			0.04		0.29	
sex.1_oil_fumes.1	Ref		Ref		Ref			Ref			
sex.2_oil_fumes.1	1.23(0.91,1.65)	0.172	1.47(1.07,2.02)	0.018	1.08(0.61,1.90)	0.792		0.56(0.18,1.68)		0.297	
sex.1_oil_fumes.2	2.29(1.77,2.95)	<0.001	1.91(1.44,2.55)	<0.001	2.29(1.43,3.67)	<0.001		1.99(0.90,4.38)		0.088	
				1		1					
sex.2_oil_fumes.2	2.69(1.31,3.18)	<0.001	1.76(1.33,2.33)	<0.001	1.04(0.62,1.73)	0.886		0.80(0.33,1.97)		0.631	
				1							
sex.1_oil_fumes.3	5.39(3.53,8.23)	<0.001	2.48(1.54,3.99)	<0.001	4.48(2.33,8.60)	<0.001		5.06(1.73,14.79)		0.003	
				1		1					
sex.2_oil_fumes.3	6.57(2.86,9.31)	<0.001	4.05(2.46,6.66)	<0.001	1.36(0.55,3.39)	0.508		3.91(1.11,13.81)		0.034	
				1							
sex.1_oil_fumes.4	8.19(3.29,20.37)	<0.001	2.95(1.08,8.02)	0.034	4.19(1.14,15.36)	0.031		5.60(1.06,29.65)		0.043	
sex.2_oil_fumes.4	9.25(2.82,30.39)	<0.001	4.33(1.15,16.29)	0.03	1.80(0.28,11.68)	0.539		17.77(3.22,98.00)		<0.001	
										1	
dm			0.904		0.551	0.116				0.615	
sex.1_dm.0	Ref		Ref		Ref			Ref			
sex.2_dm.0	0.83(0.70,0.97)	0.022	1.11(0.93,1.32)	0.234	0.48(0.35,0.66)	<0.001		0.51(0.30,0.88)		0.016	
						1					
sex.1_dm.1	2.90(2.07,4.05)	<0.001	1.75(1.21,2.55)	0.003	1.31(0.77,2.22)	0.315		0.37(0.11,1.30)		0.121	
sex.2_dm.1	2.33(1.72,3.15)	<0.001	1.68(1.20,2.36)	0.002	1.11(0.67,1.84)	0.681		0.30(0.08,1.10)		0.069	
natural_gas			0.985		0.593	0.216					0.782
sex.1_natural_gas.0	Ref		Ref		Ref			Ref			
sex.2_natural_gas.0	0.84(0.61,1.16)	0.303	1.21(0.85,1.74)	0.292	0.39(0.22,0.70)	0.002		0.48(0.17,1.30)		0.146	
sex.1_natural_gas.1	0.83(0.65,1.06)	0.128	0.90(0.67,1.20)	0.476	0.62(0.42,0.91)	0.015		0.79(0.40,1.57)		0.499	
sex.2_natural_gas.1	0.70(0.55,0.90)	0.005	0.98(0.74,1.30)	0.881	0.36(0.24,0.55)	<0.001		0.44(0.21,0.94)		0.034	
						1					
season			0.048	0.172			0.565				0.284
sex.1_season.1	Ref		Ref		Ref			Ref			
sex.2_season.1	0.96(0.78,1.17)	0.656	1.23(0.99,1.53)	0.064	0.58(0.40,0.84)	0.004		0.65(0.35,1.19)		0.162	
sex.1_season.2	0.75(0.61,0.92)	0.006	0.71(0.56,0.91)	0.006	0.72(0.51,1.02)	0.065		0.53(0.28,0.99)		0.048	
sex.2_season.2	0.56(0.45,0.69)	<0.001	0.70(0.55,0.88)	0.002	0.35(0.23,0.53)	<0.001		0.19(0.08,0.45)		<0.001	
						1				1	
Inhalable particles and toxic gases			0.617	0.017			0.009				0.777
sex.1_IPTG.0	Ref		Ref		Ref			Ref			
sex.2_IPTG1.0	0.84(0.72,0.97)	0.021	1.11(0.94,1.30)	0.231	0.52(0.39,0.69)	<0.001		0.53(0.31,0.89)		0.017	
						1					
sex.1_IPTG.1	3.29(1.50,7.22)	0.003	2.76(1.18,6.43)	0.019	1.81(1.14,2.13)	0.003		3.30(0.82,13.30)		0.092	
sex.2_IPTG1.1	3.61(1.74,7.49)	<0.001	3.91(1.81,8.45)	<0.001	2.17(1.49,3.97)	<0.001		2.36(0.44,12.59)		0.314	
				1		1					
IPTG:Inhalable particles and toxic gases											

Table S13 Subgroup interaction sheet between age group and environmental factors

characteristic	Overall disease			Acute disease			Chronic disease			Other disease		
	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction
lighting			0.456			0.693			0.083			0.009
age_group.1_lighting.1	Ref			Ref			Ref			Ref		
age_group.2_lighting.1	0.84(0.44,1.60)	0.587		0.94(0.50,1.75)	0.839		0.96(0.21,4.41)	0.957		1.95(0.33,11.67)	0.463	
age_group.3_lighting.1	1.40(0.71,2.78)	0.329		1.16(0.61,2.20)	0.647		7.05(1.89,26.27)	0.004		0.67(0.09,4.98)	0.698	
age_group.1_lighting.2	0.42(0.26,0.69)	<0.001		0.61(0.35,1.07)	0.086		0.37(0.09,1.57)	0.18		0.00(0.00,Inf)	0.975	
age_group.2_lighting.2	0.51(0.29,0.92)	0.026		0.70(0.41,1.21)	0.202		1.89(0.53,6.81)	0.329		2.12(0.39,11.41)	0.381	
age_group.3_lighting.2	0.84(0.46,1.54)	0.566		0.96(0.56,1.66)	0.888		5.29(1.49,18.80)	0.01		1.98(0.37,10.56)	0.425	
ventilation			0.049			0.132			0.285			0.565
age_group.1_ventilation.1	Ref			Ref			Ref			Ref		
age_group.2_ventilation.1	0.95(0.48,1.88)	0.884		0.97(0.51,1.87)	0.936		1.28(0.28,5.91)	0.75		6.34(0.65,62.32)	0.113	
age_group.3_ventilation.1	1.61(0.81,3.18)	0.174		1.50(0.80,2.81)	0.208		5.71(1.53,21.33)	0.01		2.49(0.24,25.73)	0.443	
age_group.1_ventilation.2	0.56(0.33,0.97)	0.039		0.63(0.35,1.16)	0.137		0.34(0.06,1.86)	0.214		0.00(0.00,Inf)	0.986	
age_group.2_ventilation.2	0.55(0.30,1.03)	0.062		0.58(0.33,1.03)	0.065		1.21(0.32,4.61)	0.782		2.04(0.20,20.32)	0.543	
age_group.3_ventilation.2	1.07(0.56,2.03)	0.838		1.01(0.57,1.81)	0.963		5.87(1.61,21.33)	0.007		1.98(0.19,20.35)	0.565	
age_group.1_ventilation.3	0.65(0.37,1.13)	0.126		0.74(0.40,1.38)	0.342		0.40(0.07,2.20)	0.293		0.45(0.02,8.63)	0.593	
age_group.2_ventilation.3	0.58(0.31,1.10)	0.095		0.62(0.34,1.13)	0.116		1.72(0.44,6.66)	0.434		2.91(0.28,29.66)	0.368	
age_group.3_ventilation.3	1.00(0.52,1.94)	0.997		0.81(0.43,1.51)	0.505		4.63(1.23,17.48)	0.024		2.76(0.26,29.36)	0.399	
age_group.1_ventilation.4	0.32(0.18,0.56)	<0.001		0.38(0.20,0.71)	0.003		0.22(0.03,1.46)	0.117		0.00(0.00,Inf)	0.984	
age_group.2_ventilation.4	0.60(0.33,1.10)	0.099		0.63(0.36,1.10)	0.106		1.59(0.43,5.85)	0.486		2.39(0.24,23.24)	0.454	
age_group.3_ventilation.4	0.85(0.45,1.61)	0.618		0.71(0.39,1.28)	0.257		3.46(0.93,12.82)	0.063		2.26(0.22,22.99)	0.492	
air_condition			0.132			0.042			0.07			0.521
age_group.1_air_condition.1	Ref			Ref			Ref			Ref		
age_group.2_air_condition.1	1.53(0.84,2.82)	0.168		1.60(0.93,2.75)	0.087		3.23(0.64,16.32)	0.156		4.22(0.79,22.68)	0.093	
age_group.3_air_condition.1	2.95(1.63,5.35)	<0.001		1.83(1.11,3.02)	0.019		23.74(5.50,102.43)	<0.001		4.53(0.90,22.67)	0.066	
age_group.1_air_condition.2	0.88(0.51,1.51)	0.634		0.88(0.50,1.57)	0.673		0.83(0.11,6.16)	0.858		0.00(0.00,Inf)	0.988	

tion.2								
age_group.2_air_condi tion.2	1.31(0.73,2.36)	0.362	0.91(0.55,1.52)	0.722	4.27(0.95,19.26)	0.059	5.49(1.11,27.13)	0.037
age_group.3_air_condi tion.2	2.49(1.37,4.53)	0.003	1.93(1.16,3.20)	0.011	14.11(3.21,62.00)	<0.00 1	3.56(0.66,19.07)	0.139
age_group.1_air_condi tion.3	1.19(0.72,1.98)	0.494	1.06(0.62,1.82)	0.82	0.62(0.08,4.58)	0.638	0.00(0.00,Inf)	0.987
age_group.2_air_condi tion.3	1.61(0.91,2.86)	0.101	1.37(0.84,2.22)	0.208	4.37(0.98,19.43)	0.053	1.94(0.37,10.10)	0.431
age_group.3_air_condi tion.3	1.97(1.07,3.62)	0.03	1.28(0.75,2.18)	0.365	9.36(2.09,41.85)	0.003	1.12(0.17,7.56)	0.909
age_group.1_air_condi tion.4	1.35(0.82,2.21)	0.235	1.40(0.83,2.37)	0.204	1.79(0.33,9.68)	0.501	0.00(0.00,Inf)	0.987
age_group.2_air_condi tion.4	1.32(0.75,2.32)	0.33	1.22(0.76,1.96)	0.414	3.69(0.84,16.33)	0.085	0.96(0.18,5.29)	0.965
age_group.3_air_condi tion.4	2.15(1.16,3.98)	0.016	1.61(1.03,2.76)	0.037	7.71(1.68,35.42)	0.009	1.56(0.23,10.62)	0.65
fluffy_product		0.301		0.788		0.295		0.049
age_group.1_fluffy_pr oduct.1	Ref		Ref		Ref		Ref	
age_group.2_fluffy_pr oduct.1	1.31(0.81,2.12)	0.268	1.19(0.83,1.69)	0.337	2.72(1.15,6.44)	0.023	7.03(1.54,32.04)	0.012
age_group.3_fluffy_pr oduct.1	2.34(1.42,3.84)	<0.001	1.67(1.17,2.40)	0.005	8.18(3.61,18.50)	<0.00 1	4.97(1.05,23.47)	0.043
age_group.1_fluffy_pr oduct.2	1.85(1.26,2.71)	0.002	1.77(1.18,2.65)	0.005	0.94(0.27,3.29)	0.92	0.00(0.00,Inf)	0.987
age_group.2_fluffy_pr oduct.2	2.20(1.37,3.52)	0.001	1.95(1.39,2.74)	<0.00 1	3.59(1.55,8.34)	0.003	4.16(0.86,20.05)	0.075
age_group.3_fluffy_pr oduct.2	3.40(2.04,5.65)	<0.001	2.50(1.72,3.63)	<0.00 1	10.46(4.56,23.96)	<0.00 1	8.03(1.69,38.14)	0.009
age_group.1_fluffy_pr oduct.3	1.68(1.03,2.76)	0.038	1.48(0.89,2.46)	0.133	0.00(0.00,Inf)	0.976	0.00(0.00,Inf)	0.991
age_group.2_fluffy_pr oduct.3	2.21(1.34,3.65)	0.002	1.80(1.22,2.67)	0.003	3.39(1.35,8.56)	0.01	8.76(1.76,43.70)	0.008
age_group.3_fluffy_pr oduct.3	4.85(2.79,8.44)	<0.001	2.53(1.61,3.97)	<0.00 1	13.16(5.48,31.58)	<0.00 1	3.82(0.59,24.58)	0.159
age_group.1_fluffy_pr oduct.4	4.80(2.37,9.73)	<0.001	3.95(1.89,8.27)	<0.00 1	0.00(0.00,Inf)	0.988	0.00(0.00,Inf)	0.995
age_group.2_fluffy_pr oduct.4	3.62(1.98,6.65)	<0.001	2.47(1.43,4.29)	0.001	3.70(1.10,12.43)	0.034	25.69(4.54,145.4 5)	<0.00 1
age_group.3_fluffy_pr oduct.4	3.87(1.72,8.73)	0.001	2.89(1.35,6.16)	0.006	5.73(1.53,21.51)	0.01	0.00(0.00,Inf)	0.996
oil_fumes		0.188		0.026		0.719		0.194
age_group.1_oil_fume	Ref		Ref		Ref		Ref	

s.1									
age_group.2_oil_fume	1.67(1.00,2.80)	0.052	1.71(1.14,2.56)	0.009	3.88(1.29,11.62)	0.015	inf.(0.00,Inf)	0.982	
s.1									
age_group.3_oil_fume	2.61(1.51,4.51)	<0.001	2.07(1.35,3.19)	<0.00	9.77(3.39,28.23)	<0.00	5212727.52(0.00	0.983	
s.1				1		1	,Inf)		
age_group.1_oil_fume	2.61(1.78,3.81)	<0.001	2.27(1.53,3.37)	<0.00	1.34(0.39,4.65)	0.642	1436207.50(0.00	0.985	
s.2				1			,Inf)		
age_group.2_oil_fume	2.64(1.62,4.32)	<0.001	2.14(1.49,3.07)	<0.00	4.74(1.69,13.31)	0.003	inf.(0.00,Inf)	0.982	
s.2				1					
age_group.3_oil_fume	4.11(2.45,6.91)	<0.001	2.82(1.93,4.11)	<0.00	16.00(5.79,44.22	<0.00	inf.(0.00,Inf)	0.982	
s.2				1	)	1			
age_group.1_oil_fume	4.82(2.15,10.8	<0.001	4.05(1.74,9.42)	0.001	0.00(0.00,Inf)	0.976	1.97(0.00,Inf)	1	
s.3	1)								
age_group.2_oil_fume	5.45(2.87,10.3	<0.001	3.17(1.77,5.69)	<0.00	8.94(2.62,30.56)	<0.00	inf.(0.00,Inf)	0.981	
s.3	2)			1		1			
age_group.3_oil_fume	13.80(7.25,26.	<0.001	5.72(3.29,9.93)	<0.00	19.89(6.42,61.63	<0.00	inf.(0.00,Inf)	0.981	
s.3	28)			1	)	1			
age_group.1_oil_fume	9.11(1.14,32.8	0.037	0.69(0.04,11.45	0.798	0.00(0.00,Inf)	0.989	inf.(0.00,Inf)	0.981	
s.4	0)		)						
age_group.2_oil_fume	8.94(3.05,26.2	<0.001	2.91(0.92,9.27)	0.07	7.39(1.03,53.22)	0.047	inf.(0.00,Inf)	0.979	
s.4	3)								
age_group.3_oil_fume	13.74(3.31,35.	<0.001	11.42(2.97,43.9	<0.00	34.85(6.28,193.3	<0.00	inf.(0.00,Inf)	0.982	
s.4	99)		0)	1	1)	1			
dm		0.002		0.02		0.631		0.398	
age_group.1_dm.0	Ref		Ref		Ref		Ref		
age_group.2_dm.0	1.34(0.89,2.01)	0.157	1.18(0.94,1.49)	0.148	3.84(1.90,7.79)	<0.00	23.25(3.11,173.9	0.002	
						1	2)		
age_group.3_dm.0	2.04(1.32,3.15)	0.001	1.45(1.13,1.86)	0.003	11.10(5.56,22.16	<0.00	18.89(2.48,143.8	0.005	
					)	1	4)		
age_group.1_dm.1	3.05(1.92,4.86)	<0.001	1.99(1.20,3.31)	0.007	1.24(0.25,6.14)	0.788	3.92(0.19,79.58)	0.374	
age_group.2_dm.1	2.66(1.61,4.38)	<0.001	1.50(1.01,2.25)	0.047	6.05(2.56,14.28)	<0.00	8.82(0.85,91.77)	0.068	
						1			
age_group.3_dm.1	10.65(5.90,19.	<0.001	4.13(2.54,6.70)	<0.00	23.92(10.38,55.1	<0.00	8.34(0.72,96.68)	0.09	
	21)			1	3)	1			
natural_gas		0.407		0.336		0.65		0.917	
age_group.1_natural_g	Ref		Ref		Ref		Ref		
as.0									
age_group.2_natural_g	1.48(0.82,2.66)	0.192	1.44(0.86,2.42)	0.165	2.46(0.76,8.04)	0.135	9.08(0.98,84.13)	0.052	
as.0									
age_group.3_natural_g	2.64(1.48,4.71)	0.001	2.06(1.27,3.33)	0.003	8.83(3.02,25.82)	<0.00	8.16(0.91,73.23)	0.061	
as.0						1			
age_group.1_natural_g	1.07(0.71,1.63)	0.746	1.18(0.75,1.85)	0.466	0.50(0.14,1.77)	0.28	0.48(0.03,8.66)	0.618	
as.1									
age_group.2_natural_g	1.27(0.74,2.16)	0.383	1.24(0.81,1.91)	0.323	2.38(0.83,6.86)	0.107	7.89(0.91,68.30)	0.061	

as.1									
age_group.3_natural_g	2.02(1.16,3.51)	0.013	1.62(1.04,2.53)	0.032	7.02(2.46,20.07)	<0.001	6.22(0.70,55.67)	0.102	
as.1						1			
season		<0.001		<0.001			0.209		0.234
age_group.1_season.1	Ref		Ref		Ref		Ref		
age_group.2_season.1	1.58(1.05,2.40)	0.029	1.17(0.88,1.54)	0.281	4.13(1.84,9.27)	<0.001	18.19(2.32,142.67)	0.006	
age_group.3_season.1	1.67(1.06,2.62)	0.026	1.06(0.77,1.46)	0.728	10.13(4.52,22.67)	<0.001	19.54(2.46,155.21)	0.005	
age_group.1_season.2	0.66(0.47,0.93)	0.019	0.54(0.38,0.77)	<0.001	0.50(0.14,1.75)	0.28	1.24(0.07,20.73)	0.883	
age_group.2_season.2	0.66(0.44,1.00)	0.047	0.55(0.40,0.74)	<0.001	1.89(0.80,4.45)	0.146	10.00(1.24,80.51)	0.031	
age_group.3_season.2	1.87(1.19,2.93)	0.007	1.15(0.85,1.57)	0.362	7.85(3.51,17.57)	<0.001	4.57(0.52,39.88)	0.17	
Inhalable particles and toxic gases		0.023		0.776			0.003		0.353
age_group.1_IPTG.0	Ref		Ref		Ref		Ref		
age_group.2_IPTG.0	1.27(0.86,1.89)	0.236	1.11(0.89,1.38)	0.35	4.10(2.10,8.02)	<0.001	20.87(2.84,153.49)	0.003	
age_group.3_IPTG.0	2.20(1.44,3.37)	<0.001	1.51(1.20,1.90)	<0.001	12.81(6.65,24.66)	<0.001	17.78(2.38,132.53)	0.005	
age_group.1_IPTG.1	6.54(1.93,22.14)	0.003	2.76(0.69,11.12)	0.152	5.26(0.46,60.75)	0.184	21.52(0.83,559.36)	0.065	
age_group.2_IPTG.1	5.30(2.50,11.22)	<0.001	4.21(2.11,8.40)	<0.001	16.21(5.71,46.02)	<0.001	90.14(9.25,878.20)	<0.001	
age_group.3_IPTG.1	5.10(1.19,21.93)	0.029	3.18(0.59,16.97)	0.177	20.11(10.17,37.35)	<0.001	21.53(0.79,583.45)	0.068	
IPTG:Inhalable particles and toxic gases									

Table S14 Subgroup interaction sheet between gender and disease history factors

characteristic	Overall disease			Acute disease			Chronic disease			Other disease		
	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction
history_of_RD			0.124			0.74		0.026			0.207	
sex.1_history_of_RD.0	Ref			Ref	0.208		Ref			Ref		
sex.2_history_of_RD.0	0.98(0.79,1.21)	0.839		1.16(0.92,1.45)	<0.001		0.91(0.56,1.47)	0.705		0.32(0.15,0.68)	0.003	
sex.1_history_of_RD.1	17.60(13.50,22.95)	<0.001		4.82(3.65,6.37)	<0.001		9.03(5.93,13.77)	<0.001		1.46(0.74,2.86)	0.271	
sex.2_history_of_RD.1	12.95(9.96,16.84)	<0.001		5.96(4.50,7.88)		0.404	4.10(2.54,6.60)	<0.001		0.92(0.43,1.94)	0.823	
fourt_phb			0.47						0.402			0.625
sex.1_fourt_phb.0	Ref			Ref	0.05		Ref			Ref		
sex.2_fourt_phb.0	0.83(0.69,1.00)	0.053		1.24(1.00,1.53)	<0.001		0.54(0.37,0.79)	0.002		0.40(0.21,0.77)	0.006	
sex.1_fourt_phb.1	9.60(7.24,12.73)	<0.001		3.77(2.76,5.14)	<0.001		1.58(1.04,2.38)	0.031		1.58(0.78,3.22)	0.203	
sex.2_fourt_phb.1	6.96(5.34,9.07)	<0.001		3.89(2.89,5.25)		0.158	1.11(0.72,1.71)	0.646		0.83(0.38,1.85)	0.655	
cough			0.709						0.026			0.953
sex.1_cough.1	Ref			Ref	0.909		Ref			Ref		
sex.2_cough.1	1.12(0.92,1.38)	0.258		1.01(0.81,1.27)	<0.001		0.97(0.62,1.52)	0.884		0.48(0.24,0.98)	0.043	
sex.1_cough.2	4.13(3.27,5.22)	<0.001		1.70(1.28,2.26)	<0.001		3.63(2.34,5.63)	<0.001		1.78(0.90,3.52)	0.096	
sex.2_cough.2	4.24(3.25,5.53)	<0.001		2.61(1.91,3.56)	0.89		1.38(0.79,2.41)	0.26		0.68(0.26,1.76)	0.425	
sex.1_cough.3	10.46(6.12,17.89)	<0.001		1.04(0.56,1.93)	0.214		11.06(5.74,21.31)	<0.001		2.27(0.68,7.56)	0.182	
sex.2_cough.3	7.13(3.40,14.94)	<0.001		1.79(0.72,4.46)	0.015		5.16(1.83,14.59)	0.002		0.66(0.07,6.12)	0.718	
sex.1_cough.4	10.63(5.46,20.70)	<0.001		2.67(1.21,5.90)	0.002		6.65(2.75,16.07)	<0.001		3.87(1.14,13.12)	0.03	
sex.2_cough.4	13.18(5.12,33.89)	<0.001		5.49(1.88,16.05)		0.575	1.65(0.41,6.68)	0.485		2.17(0.38,12.30)	0.381	
CHD			0.484						0.71			0.774
sex.1_CHD.0	Ref			Ref	0.096		Ref			Ref		
sex.2_CHD.0	0.83(0.71,0.97)	0.021		1.17(0.97,1.42)	0.796		0.61(0.44,0.83)	0.002		0.43(0.24,0.75)	0.003	
sex.1_CHD.1	2.07(1.15,3.72)	0.016		0.90(0.39,2.05)	0.334		3.26(1.43,7.46)	0.005		4.39(1.59,12.15)	0.004	
sex.2_CHD.1	2.31(1.29,4.12)	0.005		1.44(0.68,3.05)		0.912	1.58(0.69,3.61)	0.276		2.36(0.75,7.37)	0.14	

Allergy_history			0.179				0.457		0.215
sex.1_Allergy_history.	Ref		Ref	0.134		Ref		Ref	
1									
sex.2_Allergy_history.	0.81(0.67,0.97	0.021	1.18(0.95,1.46)	<0.00		0.55(0.38,0.80)	0.002	0.33(0.16,0.68)	0.003
1	)			1					
sex.1_Allergy_history.	7.76(5.85,10.2	<0.001	3.66(2.66,5.02)	<0.00		1.49(0.96,2.31)	0.073	2.03(1.04,3.96)	0.038
2	9)			1					
sex.2_Allergy_history.	4.87(3.81,6.22	<0.001	4.41(3.34,5.81)		0.13	1.05(0.67,1.64)	0.827	1.30(0.64,2.63)	0.468
2	)								
other_CVD			0.48					0.306	0.075
sex.1_other_CVD.0	Ref		Ref	0.134		Ref		Ref	
	0.83(0.71,0.97								<0.00
sex.2_other_CVD.0	)	0.018	1.16(0.96,1.40)	0.582		0.62(0.45,0.84)	0.003	0.35(0.19,0.64)	1
sex.1_other_CVD.1	4.11(2.12,7.99	<0.001	0.79(0.33,1.85)	0.036		2.63(1.03,6.67)	0.042	4.93(1.72,14.10)	0.003
	)								
sex.2_other_CVD.1	4.70(2.58,8.57	<0.001	2.10(1.05,4.20)			0.78(0.27,2.24)	0.65	6.16(2.54,14.96)	<0.00
	)								1

Table S15 Subgroup interaction sheet between age group and disease history factors

characteristic	Overall disease			Acute disease			Chronic disease			Other disease		
	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction
history_of_RD			<0.001			<0.001			<0.001			0.954
age_group.1_history_of_RD.0	Ref			Ref			Ref			Ref		
age_group.2_history_of_RD.0	1.57(0.98,2.52)	0.063		1.53(1.15,2.05)	0.004		4.04(1.71,9.53)	0.001		11.76(1.59,87.28)	0.016	
age_group.3_history_of_RD.0	1.25(0.74,2.11)	0.41		1.44(1.02,2.03)	0.04		3.31(1.29,8.47)	0.013		8.55(1.07,68.49)	0.043	
age_group.1_history_of_RD.1	14.89(6.20,28.22)	<0.001		12.87(8.13,20.38)	<0.001		3.33(0.97,11.45)	0.056		2.76(0.16,48.49)	0.488	
age_group.2_history_of_RD.1	6.55(3.57,10.81)	<0.001		5.96(4.23,8.40)	<0.001		13.24(5.47,32.05)	<0.001		20.56(2.64,160.15)	0.004	
age_group.3_history_of_RD.1	20.11(10.31,35.70)	<0.001		5.97(4.16,8.55)	<0.001		41.98(17.79,99.10)	<0.001		15.71(1.97,124.93)	0.009	
fourt_phb			0.001			0.896			0.886			0.246
age_group.1_fourt_phb.0	Ref			Ref			Ref			Ref		
age_group.2_fourt_phb.0	1.20(0.78,1.86)	0.402		1.10(0.84,1.45)	0.491		3.52(1.50,8.29)	0.004		9.59(1.29,71.19)	0.027	
age_group.3_fourt_phb.0	1.76(1.11,2.81)	0.017		0.99(0.72,1.36)	0.962		6.89(2.92,16.25)	<0.001		9.43(1.23,72.46)	0.031	
age_group.1_fourt_phb.1	7.34(5.06,10.66)	<0.001		3.38(2.23,5.12)	<0.001		1.47(0.43,5.06)	0.542		2.34(0.14,40.02)	0.558	
age_group.2_fourt_phb.1	8.34(5.15,13.49)	<0.001		3.70(2.54,5.38)	<0.001		7.12(2.84,17.86)	<0.001		25.54(3.25,200.56)	0.002	
age_group.3_fourt_phb.1	18.69(6.08,31.18)	<0.001		3.73(2.43,5.73)	<0.001		12.80(5.15,31.77)	<0.001		9.80(1.12,85.70)	0.039	
cough			<0.001			0.119			0.106			0.596
age_group.1_cough.1	Ref			Ref			Ref			Ref		
age_group.2_cough.1	1.16(0.76,1.78)	0.489		1.11(0.84,1.46)	0.462		3.65(1.70,7.81)	<0.001		12.19(1.63,90.94)	0.015	
age_group.3_cough.1	1.27(0.80,2.03)	0.313		1.20(0.87,1.67)	0.273		4.51(2.01,10.13)	<0.001		9.87(1.23,79.21)	0.031	
age_group.1_cough.2	3.67(2.41,5.60)	<0.001		2.82(1.73,4.58)	<0.001		1.25(0.26,6.09)	0.781		0.00(0.00,Inf)	0.983	
age_group.2_cough.2	3.50(2.23,5.48)	<0.001		2.43(1.75,3.37)	<0.001		5.30(2.34,12.02)	<0.001		25.34(3.31,194.09)	0.002	
age_group.3_cough.2	6.96(4.30,11.25)	<0.001		1.79(1.25,2.55)	0.001		14.48(6.73,31.16)	<0.001		12.89(1.59,104.68)	0.017	
age_group.1_cough.3	1.16(0.26,5.19)	0.844		0.61(0.10,3.71)	0.591		5.58(0.58,53.41)	0.136		0.00(0.00,Inf)	0.994	

age_group.2_cough.3	7.66(3.38,17.34)	<0.001	1.12(0.46,2.74)	0.796	22.95(7.56,69.70)	<0.001	14.10(0.82,243.43)	0.069
age_group.3_cough.3	12.37(3.14,22.26)	<0.001	1.60(0.80,3.23)	0.186	42.90(16.63,110.62)	<0.001	28.77(2.91,284.29)	0.004
age_group.1_cough.4	6.98(2.27,21.47)	<0.001	1.48(0.35,6.25)	0.596	0.00(0.00,Inf)	0.974	26.41(1.25,558.85)	0.036
age_group.2_cough.4	11.35(4.87,26.47)	<0.001	6.75(2.88,15.83)	<0.001	10.28(2.65,39.85)	<0.001	34.14(2.74,425.07)	0.006
age_group.3_cough.4	16.42(7.38,30.81)	<0.001	2.23(0.70,7.11)	0.174	57.22(15.44,212.14)	<0.001	66.81(6.04,739.03)	<0.001
CHD		0.574		0.919		0.575		0.071
age_group.1_CHD.0	Ref		Ref		Ref		Ref	
age_group.2_CHD.0	1.23(0.83,1.82)	0.296	1.10(0.87,1.39)	0.42	3.99(2.07,7.69)	<0.001	9.19(2.15,39.20)	0.003
age_group.3_CHD.0	1.99(1.31,3.04)	0.001	1.02(0.78,1.34)	0.875	7.81(4.04,15.08)	<0.001	8.28(1.86,36.81)	0.005
age_group.1_CHD.1	0	NA	0.00(0.00,inf.)	0.976	0.00(0.00,inf.)	0.983	0.00(0.00,Inf)	0.99
age_group.2_CHD.1	4.00(1.28,8.50)	0.017	1.41(0.32,6.26)	0.649	17.08(2.96,98.48)	0.001	179.56(25.19,1280.06)	<0.001
age_group.3_CHD.1	4.00(2.20,7.27)	<0.001	1.11(0.60,2.06)	0.747	12.09(5.12,28.56)	<0.001	19.41(3.60,104.78)	<0.001
Allergy_history		<0.001		<0.001		0.956		0.729
age_group.1_Allergy_history.1	Ref		Ref		Ref		Ref	
age_group.2_Allergy_history.1	1.66(1.05,2.62)	0.031	1.51(1.14,2.00)	0.004	4.30(1.92,9.64)	<0.001	12.88(1.73,95.68)	0.013
age_group.3_Allergy_history.1	2.60(1.61,4.21)	<0.001	1.42(1.04,1.94)	0.026	8.01(3.60,17.83)	<0.001	8.28(1.06,64.58)	0.044
age_group.1_Allergy_history.2	10.25(3.90,21.80)	<0.001	12.32(7.52,20.17)	<0.001	1.95(0.53,7.13)	0.313	3.85(0.22,67.41)	0.355
age_group.2_Allergy_history.2	7.31(4.54,11.77)	<0.001	4.58(3.30,6.34)	<0.001	6.99(3.00,16.28)	<0.001	24.92(3.25,190.86)	0.002
age_group.3_Allergy_history.2	14.46(8.05,29.24)	<0.001	3.40(2.14,5.41)	<0.001	13.99(5.81,33.69)	<0.001	23.42(2.85,192.69)	0.003
other_CVD		0.145		0.655		0.38		0.655
age_group.1_other_CVD.0	Ref		Ref		Ref		Ref	
age_group.2_other_CVD.0	1.29(0.86,1.91)	0.215	1.11(0.87,1.40)	0.4	4.39(2.23,8.67)	<0.001	8.38(2.00,35.20)	0.004
age_group.3_other_CVD.0	2.11(1.38,3.23)	<0.001	1.03(0.79,1.36)	0.809	8.04(4.06,15.91)	<0.001	5.91(1.32,26.33)	0.02
age_group.1_other_CVD.1	0	NA	3.66(0.27,49.44)	0.329	6.93(0.42,113.88)	0.175	0.00(0.00,Inf)	0.985
age_group.2_other_CVD.1	4.95(2.50,9.79)	<0.001	1.49(0.74,3.01)	0.264	4.41(1.23,15.83)	0.023	60.97(12.11,306)	<0.001

D.1	)								.94)	1
age_group.3_other_CV	12.25(5.02,29.	<0.001		1.08(0.44,2.67)	0.869		16.75(5.39,52.04)	<0.00	56.66(9.91,323.	<0.00
D.1	93)							1	93)	1

Table S16 Subgroup interaction sheet between gender and family history factors

characteristic	Overall disease			Acute disease			Chronic disease			Other disease		
	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction
COPD_f			0.568			0.161			0.62			0.039
sex.1_COPD_f.0	Ref			Ref			Ref			Ref		
sex.2_COPD_f.0	0.82(0.69,0.97)	0.021		0.99(0.83,1.19)	0.949		0.48(0.34,0.68)	<0.00		0.27(0.13,0.55)	<0.00	
	)						1	1		1	1	
sex.1_COPD_f.1	6.86(5.07,9.30)	<0.001		1.93(1.37,2.73)	<0.00		2.27(1.47,3.51)	<0.00		1.63(0.76,3.50)	0.209	
	)				1		1	1				
sex.2_COPD_f.1	6.32(4.73,8.44)	<0.001		2.64(1.91,3.67)	<0.00		0.93(0.57,1.51)	0.766		1.33(0.61,2.90)	0.476	
	)				1							
Bronchitis_f			0.151			0.043			0.316			0.596
sex.1_Bronchitis_f.0	Ref			Ref			Ref			Ref		
sex.2_Bronchitis_f.0	0.79(0.67,0.94)	0.009		0.96(0.80,1.16)	0.701		0.51(0.35,0.72)	<0.00		0.39(0.21,0.73)	0.003	
	)						1	1				
sex.1_Bronchitis_f.1	4.12(3.13,5.43)	<0.001		1.34(0.96,1.87)	0.083		2.36(1.56,3.56)	<0.00		0.92(0.44,1.93)	0.823	
	)						1	1				
sex.2_Bronchitis_f.1	4.32(3.31,5.63)	<0.001		2.00(1.48,2.72)	<0.00		0.88(0.55,1.41)	0.588		0.48(0.21,1.12)	0.089	
	)				1							
Eczema_f			0.554			0.004			0.104			0.378
sex.1_Eczema_f.0	Ref			Ref			Ref			Ref		
sex.2_Eczema_f.0	0.83(0.70,0.99)	0.035		0.95(0.79,1.13)	0.56		0.54(0.38,0.77)	<0.00		0.36(0.18,0.70)	0.003	
	)						1	1				
sex.1_Eczema_f.1	10.16(3.44,20.25)	<0.001		3.11(2.16,4.47)	<0.00		6.92(4.48,10.70)	<0.00		3.80(1.77,8.17)	<0.00	
					1		1	1		1	1	
sex.2_Eczema_f.1	9.78(13.40,29.21)	<0.001		5.95(4.12,8.58)	<0.00		2.28(1.38,3.77)	0.001		2.16(0.92,5.05)	0.077	
					1							
Lung_fibrosis_f			0.81			0.764			0.746			0.243
sex.1_Lung_fibrosis_f.0	Ref			Ref			Ref			Ref		
sex.2_Lung_fibrosis_f.0	0.83(0.71,0.97)	0.017		1.05(0.89,1.25)	0.544		0.45(0.33,0.61)	<0.00		0.38(0.22,0.66)	<0.00	
	)						1	1		1	1	
sex.1_Lung_fibrosis_f.1	10.89(3.19,27.47)	<0.001		2.65(1.31,5.38)	0.007		0.98(0.48,2.01)	0.962		1.20(0.41,3.48)	0.739	
sex.2_Lung_fibrosis_f.1	9.68(2.78,19.61)	<0.001		2.43(1.31,4.52)	0.005		0.51(0.25,1.04)	0.066		1.04(0.39,2.79)	0.942	

Table S17 Subgroup interaction sheet between age group and family history factors

characteristic	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction
COPD_f			0.723			0.044			0.758			0.578
age_group.1_COPD_f.0	Ref			Ref			Ref			Ref		
age_group.2_COPD_f.0	1.23(0.81,1.87)	0.333		1.09(0.86,1.37)	0.483		3.18(1.56,6.48)	0.002		14.76(2.00,108.97)	0.008	
age_group.3_COPD_f.0	2.13(1.36,3.35)	<0.001		1.38(1.07,1.78)	0.012		9.37(4.66,18.83)	<0.001		15.95(2.11,120.82)	0.007	
age_group.1_COPD_f.1	8.37(4.79,14.63)	<0.001		4.20(2.31,7.62)	<0.001		1.57(0.32,7.72)	0.581		10.18(0.61,170.50)	0.107	
age_group.2_COPD_f.1	9.34(5.76,15.15)	<0.001		2.50(1.73,3.59)	<0.001		5.58(2.50,12.48)	<0.001		30.82(3.84,247.63)	0.001	
age_group.3_COPD_f.1	13.98(8.15,23.99)	<0.001		2.36(1.57,3.55)	<0.001		20.56(9.51,44.45)	<0.001		33.47(4.09,274.21)	0.001	
Bronchitis_f			0.046			0.087			0.451			0.016
age_group.1_Bronchitis_f.0	Ref			Ref			Ref			Ref		
age_group.2_Bronchitis_f.0	1.30(0.86,1.97)	0.212		1.11(0.88,1.40)	0.367		3.60(1.70,7.62)	<0.001		inf.(0.00,Inf)	0.975	
age_group.3_Bronchitis_f.0	2.05(1.31,3.21)	0.002		1.20(0.93,1.55)	0.164		9.93(4.75,20.75)	<0.001		inf.(0.00,Inf)	0.975	
age_group.1_Bronchitis_f.1	4.78(2.87,7.98)	<0.001		2.21(1.26,3.89)	0.006		2.27(0.57,9.09)	0.247		9168676.37(0.00,Inf)	0.976	
age_group.2_Bronchitis_f.1	5.23(3.28,8.32)	<0.001		1.49(1.06,2.11)	0.023		5.59(2.46,12.75)	<0.001		9333783.35(0.00,Inf)	0.976	
age_group.3_Bronchitis_f.1	13.89(8.20,23.54)	<0.001		2.59(1.74,3.84)	<0.001		22.87(10.30,50.77)	<0.001		inf.(0.00,Inf)	0.975	
Eczema_f			0.837			0.031			0.229			0.027
age_group.1_Eczema_f.0	Ref			Ref			Ref			Ref		
age_group.2_Eczema_f.0	1.20(0.77,1.85)	0.419		1.07(0.86,1.35)	0.54		4.20(1.90,9.28)	<0.001		inf.(0.00,Inf)	0.975	
age_group.3_Eczema_f.0	1.90(1.19,3.03)	0.007		1.37(1.07,1.76)	0.012		11.36(5.20,24.82)	<0.001		inf.(0.00,Inf)	0.975	
age_group.1_Eczema_f.1	25.77(11.82,56.16)	<0.001		9.49(4.46,20.22)	<0.001		9.10(2.46,33.76)	<0.001		inf.(0.00,Inf)	0.974	
age_group.2_Eczema_f.1	24.46(14.11,42.39)	<0.001		4.91(3.31,7.29)	<0.001		15.42(6.36,37.38)	<0.001		inf.(0.00,Inf)	0.973	
age_group.3_Eczema_f.1	28.10(19.79,65.36)	<0.001		4.42(2.92,6.70)	<0.001		65.90(28.28,153.59)	<0.001		inf.(0.00,Inf)	0.973	
Lung_fibrosis_f			0.046			0.16			0.188			0.004
age_group.1_Lung_fibro	Ref			Ref			Ref			Ref		

sis_f.0												
age_group.2_Lung_fibro	1.21(0.81,1.83											
sis_f.0	)	0.351		1.04(0.84,1.30)	0.697		3.11(1.63,5.92)	<0.00		18.76(2.57,137.04)		0.004
age_group.3_Lung_fibro	1.95(1.26,3.02											
sis_f.0	)	0.003		1.27(1.00,1.61)	0.046		9.20(4.89,17.32)	<0.00		15.14(2.02,113.72)		0.008
age_group.1_Lung_fibro	13.28(7.23,24.56)	<0.00		11.85(1.38,101.74)	0.024		0.00(0.00,Inf)	0.978		30.22(1.65,554.50)		0.022
sis_f.1		1										
age_group.2_Lung_fibro	18.89(9.18,38.85)	<0.00		2.65(1.39,5.05)	0.003		2.60(1.01,6.66)	0.047		9.86(0.95,101.83)		0.055
sis_f.1		1										
age_group.3_Lung_fibro	21.86(7.59,37.47)	<0.00		2.22(1.03,4.77)	0.042		15.86(6.15,40.91)	<0.00		65.47(7.38,580.97)	<0.00	1
sis_f.1		1						1				

Table S18 Subgroup interaction sheet between gender and other factors

characteristic	Overall disease			Acute disease			Chronic disease			Other disease		
	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction
emotion			0.372			0.354			0.113			0.578
sex.1_emotion.1	Ref			Ref			Ref			Ref		
sex.2_emotion.1	0.79(0.57,1.08)	0.132		1.02(0.73,1.44)	0.892		0.41(0.19,0.87)	0.021		0.51(0.20,1.31)	0.159	
sex.1_emotion.2	2.17(1.71,2.75)	<0.001		1.79(1.37,2.35)	<0.001		2.16(1.40,3.35)	<0.001		1.02(0.54,1.94)	0.945	
					1			1				
sex.2_emotion.2	1.53(1.21,1.95)	<0.001		1.63(1.25,2.13)	<0.001		0.97(0.61,1.55)	0.907		0.34(0.16,0.75)	0.007	
					1							
sex.1_emotion.3	3.73(2.43,5.72)	<0.001		3.46(2.17,5.53)	<0.001		4.27(2.24,8.15)	<0.001		0.33(0.04,2.56)	0.29	
					1			1				
sex.2_emotion.3	2.75(1.94,3.89)	<0.001		2.72(1.87,3.97)	<0.001		0.86(0.41,1.80)	0.694		0.48(0.14,1.69)	0.253	
					1							
sex.1_emotion.4	3.27(1.73,6.19)	<0.001		1.85(0.88,3.90)	0.105		1.75(0.60,5.08)	0.305		3.09(0.94,10.21)	0.064	
										)		
sex.2_emotion.4	4.55(2.80,7.39)	<0.001		3.41(2.02,5.75)	<0.001		2.00(0.88,4.57)	0.1		1.71(0.54,5.43)	0.36	
					1							

Table S19 Subgroup interaction sheet between age group and other factors

characteristic	Overall disease			Acute disease			Chronic disease			Other disease		
	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction	OR(95%CI)	P	P for interaction
emotion			0.394			0.684			0.814			0.042
age_group.1_emotion. 1	Ref			Ref			Ref			Ref		
age_group.2_emotion. 1	1.47(0.85,2.54)	0.165		1.02(0.67,1.55)	0.916		2.30(0.71,7.43)	0.163		inf.(0.00,Inf)	0.982	
age_group.3_emotion. 1	2.32(1.34,4.03)	0.003		1.46(0.97,2.21)	0.07		7.82(2.68,22.84)	<0.001		inf.(0.00,Inf)	0.982	
age_group.1_emotion. 2	2.11(1.45,3.08)	<0.001		1.82(1.24,2.66)	0.002		1.21(0.32,4.55)	0.779		0.91(0.00,Inf)	1	
age_group.2_emotion. 2	2.68(1.62,4.42)	<0.001		1.77(1.27,2.46)	<0.001		4.47(1.60,12.46)	0.004		inf.(0.00,Inf)	0.982	
age_group.3_emotion. 2	5.11(3.03,8.63)	<0.001		2.30(1.61,3.27)	<0.001		15.98(5.79,44.10)	<0.001		inf.(0.00,Inf)	0.982	
age_group.1_emotion. 3	5.41(2.97,9.88)	<0.001		4.79(2.61,8.79)	<0.001		3.29(0.58,18.80)	0.18		inf.(0.00,Inf)	0.982	
age_group.2_emotion. 3	4.21(2.36,7.50)	<0.001		2.58(1.64,4.04)	<0.001		5.27(1.65,16.83)	0.005		8240651.19(0.00,Inf)	0.983	
age_group.3_emotion. 3	8.90(4.60,17.22)	<0.001		4.34(2.48,7.60)	<0.001		21.38(6.81,67.16)	<0.001		0.61(0.00,Inf)	1	
age_group.1_emotion. 4	4.67(1.65,13.24)	0.004		3.24(1.07,9.80)	0.037		0.00(0.00,inf.)	0.973		inf.(0.00,Inf)	0.981	
age_group.2_emotion. 4	7.50(3.97,14.16)	<0.001		3.11(1.77,5.47)	<0.001		8.64(2.53,29.50)	<0.001		inf.(0.00,Inf)	0.981	
age_group.3_emotion. 4	6.30(2.46,16.13)	<0.001		3.11(1.23,7.87)	0.017		15.75(3.70,66.95)	<0.001		inf.(0.00,Inf)	0.981	