

Supporting information

Electronic, heat-not-burn, and combustible cigarette use among chronic disease patients in Japan: A cross-sectional study

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Supplementary methods

Herein, we showed simple internet survey estimates in Table S2 before IPW (inverse probability weighting) -adjustment. Methods except IPW-adjustment are same as the main text.

The results shown in Table S1, Table S3, Table S4 and Table S5 were after IPW-adjustment.

Ever-users were asked: "Approximately 15 puffs in 10 minutes is defined as *one session*. How many e-cigarettes or heat-not-burn cigarettes *sessions* have you had in your life?". Those who answered "more than 50 sessions" were defined as more than 50 sessions of ever-use [1].

Supplementary results and discussion

Adjusted basic characteristics of study subjects, distribution, median age and range (minimum to maximum) of each group were shown in Table S1 and S2. Also, adjusted percentages of each type of cigarette among younger people (15-39 years old) were shown in Table S3. Unadjusted percentages of combustible cigarette use and intention to quit smoking according to diseases were shown in Table S4. Adjusted percentage of electronic and heat-not-burn cigarette use in the last 30 days and use of more than 50 sessions were shown in Table S5. Dual usage of combustible and non-combustible products (heat-not-burn tobacco and e-cigarettes) were shown in Table S6. Comparison of smoking habits between the healthy reference group and the chronic disease patients were shown in Table S7. Further, comparison of cigarette types among the healthy reference group and the chronic disease patients who use cigarette currently were shown in Table S8.

According to National Health and Nutrition Survey in 2015, the smoking rate was 30.1% among men over 20 years old and 7.9% among women over 20 years old [2]. In this study, we estimated that the adjusted smoking rate using inverse probability weighting is 34.8% among

men and 9.7% among women (Table1). On the other hand, the unadjusted smoking rate is 23.1% among men and 9.6% among women (Table S4). Therefore, we think that it is reasonable to adopt the adjusted data in the main text.

Supplementary references

1. Takahiro Tabuchi, Kosuke Kiyohara, Takahiro Hoshino, Kanae Bekki, Yohei Inaba, Naoki Kunugita. Awareness and use of electronic cigarettes and heat-not-burn tobacco products in Japan, *Addiction* 2016; 111: 706-713. pmid: 26566956 doi: 10.1111/add.13231
2. Ministry of Health, Labour and Welfare. National Health and Nutrition Survey.
http://www.mhlw.go.jp/seisakunitsuite/bunya/kenkou_iryuu/kenkou/kenkounippon21/en/eiyouchousa/koumoku_seikatsu_syuukan_chousa.html

Table S1. Adjusted basic characteristics of study subjects, distribution among Japanese people aged 40-69 years from a 2015 internet survey.

	Men		Women		Total	
	n	%	n	%	n	%
Total	2193	100.0	2239	100.0	4432	100.0
Age groups, years						
40-49	740	33.7	747	33.4	1487	33.6
50-59	722	32.9	739	33.0	1461	33.0
60-69	731	33.3	753	33.6	1484	33.5
Area block						
Hokkaido	52	2.4	61	2.7	113	2.5
Tohoku	246	11.2	244	10.9	491	11.1
Kitakanto	136	6.2	139	6.2	275	6.2
Tokyoken	294	13.4	276	12.3	570	12.9
Chubu/Hokuriku	367	16.7	195	8.7	662	14.9
Chukyoken	154	7.0	157	7.0	311	7.0
Osakaken	183	8.3	202	9.0	385	8.7
Keihanshuhen	98	4.4	134	6.0	232	5.2
Chugoku	206	9.4	222	9.9	428	9.7
Shikoku	138	6.3	134	6.0	272	6.1
Kyushu/Okinawa	320	14.6	374	16.7	694	15.7
Marital status						
Married	1846	84.2	1746	78.0	3592	81.1
Never married	242	11.0	200	8.9	442	10.0
Widowed	25	1.2	106	4.7	132	3.0
Divorced	80	3.6	187	8.3	267	6.0
Education						
Less than high-school	132	6.0	128	5.7	260	5.9
High school	998	45.5	1155	51.6	2153	48.6
Technical or junior college	250	11.4	648	29.0	898	20.3
University (4 years)	717	32.7	260	11.6	977	22.0
Graduate university	57	2.6	9	0.4	65	1.5
Home-ownership						
No	440	20.1	417	18.6	857	19.3
Yes	1753	79.9	1822	81.4	3575	80.7
Occupation						
Regular employment	211	9.6	52	2.3	263	5.9
Self-employment	1024	46.7	371	16.6	1395	31.5
Executive officer	348	15.9	178	7.9	525	11.9
Part-time/contract employee	260	11.9	668	29.8	928	20.9
full-time homemaker	32	1.5	806	36.0	838	18.9
Retired	216	9.8	66	3.0	282	6.4
Unemployed	102	4.6	98	4.4	200	4.5
Self-rated health						
Excellent	387	17.6	349	15.6	736	16.6
Very good	376	17.1	387	17.3	763	17.2
Good	1162	53.0	1183	52.8	2345	52.9
Fair	228	10.4	296	13.2	524	11.8
Poor	41	1.9	24	1.1	64	1.5
Combustible tobacco use						
Never smoker	672	30.7	1674	74.8	2347	52.9
Former smoker	758	34.6	347	15.5	1106	24.9
Current smoker	763	34.8	217	9.7	980	22.1

Table S2. Median age and range (minimum to maximum) of each group among Japanese people aged 40-69 years from a 2015 internet survey.

	n (%)	median age(years)	range(years)
Men			
Total	2193	53	40-69
Disease numbers			
0	1352 (61.6)	52	40-69
1	591 (27.0)	56	40-69
≥2	250 (11.4)	60	40-69
Disease			
Hypertension	572 (26.1)	59	40-69
Diabetes	248 (11.3)	59	40-69
Asthma	71 (3.2)	56	40-69
Atopic dermatitis	76 (3.5)	52	40-69
Cerebrovascular diseases	74 (3.4)	62	43-69
COPD	33 (1.5)	61	45-69
Cancer	40 (1.8)	62	40-69
Mental disorder	107 (4.9)	52	40-69
depression	83 (3.8)	53	40-69
other mental diseases	45 (2.0)	52	40-69
Tobacco-caused diseases			
Yes	433 (19.7)	57	40-69
Women			
Total	2239	54	40-69
Disease numbers			
0	1573 (70.2)	53	40-69
1	509 (22.7)	56	40-69
≥2	157 (7.0)	57	40-69
Disease			
Hypertension	388 (17.3)	59	40-69
Diabetes	83 (3.7)	58	41-69
Asthma	118 (5.3)	53	40-69
Atopic dermatitis	90 (4.0)	50	40-67
Cerebrovascular diseases	43 (1.9)	60	42-69
COPD	15 (0.7)	64	43-67
Cancer	50 (2.2)	62	43-69
Mental disorder	136 (6.1)	50	40-68
depression	94 (4.2)	50	40-69
other mental diseases	81 (3.6)	50	40-68
Tobacco-caused diseases			
Yes	308 (13.7)	53	40-69

Cerebrovascular diseases include angina, cardiac infarct, and stroke. Cancer includes lung, oropharyngeal, larynx, esophagus, stomach, liver, pancreas, kidney, urinary tract, and bladder cancer. Tobacco-related diseases include diabetes, asthma, cerebrovascular diseases, COPD, cancers, and mental disorder.

Table S3. Adjusted percentages of current user of each type of cigarette among Japanese younger people (15-39 years old) from a 2015 internet survey.

	n (%)	combustible cigarettes n (%)	e-cigarettes n (%)	heat-not-burn tobacco n (%)
Men				
Total	1891	523 (28)	24 (1.3)	12 (0.6)
Disease numbers				
0	1649 (87.2)	439 (27)	17 (1.0)	4.1 (0.3)
1	190 (10.0)	63 (33)	1.7 (0.9)	1.8 (1.0)
≥2	52 (2.7)	21 (40)	5.3 (10)	5.7 (11)
Disease				
Hypertension	39 (2.1)	16 (42)	0.6 (1.6)	1.1 (2.9)
Diabetes	22 (1.2)	6.8 (31)	5.2 (24)	4.8 (22)
Asthma	50 (2.6)	15 (31)	5.5 (11)	4.8 (9.6)
Atopic dermatitis	98 (5.2)	35 (36)	5.6 (5.8)	5.3 (5.4)
Cerebrovascular diseases	14 (0.8)	8.3 (59)	5.5 (39)	5.0 (36)
COPD	14 (0.8)	13 (93)	5.3 (38)	4.8 (34)
Cancer	11 (0.6)	5.9 (54)	5.3 (48)	5.4 (49)
Mental disorder	101 (5.3)	35 (35)	6.1 (6.1)	6.3 (6.2)
depression	58 (3.1)	27 (46)	6.1 (11)	6.3 (11)
other mental diseases	70 (3.7)	20 (29)	5.2 (7.4)	5.7 (8.1)
Tobacco-caused diseases				
Yes	150 (7.9)	51 (34)	6.5 (4.3)	6.5 (4.3)
Women				
Total	1917.0	188 (10)	10 (0.5)	1.0 (0.1)
Disease numbers				
0	1555 (81.1)	132 (8.5)	5.3 (0.3)	0.5 (0.0)
1	296 (15.4)	55 (19)	3.0 (1.0)	0.0 (0.0)
≥2	66 (3.5)	0.5 (0.8)	1.9 (2.9)	0.6 (0.9)
Disease				
			0.0 (0.0)	
Hypertension	21 (1.1)	4.7 (22)	0.6 (2.7)	0.6 (2.7)
Diabetes	14 (0.7)	0.5 (3.9)	0.6 (4.1)	0.6 (4.1)
Asthma	68 (3.6)	4.8 (7.1)	2.5 (3.7)	0.6 (0.8)
Atopic dermatitis	146 (7.6)	13.8 (9.5)	0.4 (0.3)	0.4 (0.3)
Cerebrovascular diseases	13 (0.7)	0.5 (4.2)	1.9 (15)	0.6 (4.4)
COPD	13 (0.7)	0.5 (4.2)	0.4 (2.9)	0.4 (2.9)
Cancer	23 (1.2)	1.0 (4.2)	0.9 (3.8)	0.6 (2.5)
Mental disorder	186 (9.7)	33 (18)	3.3 (1.8)	0.6 (0.3)
depression	92(4.8)	13 (15)	0.6 (0.6)	0.6 (0.6)
other mental diseases	147 (7.7)	33 (23)	3.3 (2.2)	0.6 (0.4)
Tobacco-caused diseases				
Yes	150 (7.8)	38 (25)	4.9 (3.3)	0.6 (0.4)

Cerebrovascular diseases include angina, cardiac infarct, and stroke. Cancer includes lung, oropharyngeal, larynx, esophagus, stomach, liver, pancreas, kidney, urinary tract, and bladder cancer. Tobacco-related diseases include diabetes, asthma, cerebrovascular diseases, COPD, cancers, and mental disorder.

Table S4. Unadjusted percentages of combustible tobacco use and intention to quit smoking according to diseases among Japanese people aged 40-69 years from a 2015 internet survey.

	n (%)	former n (%)	current smokers		No intention to quit smoking among current smokers ²⁾	
			n (%)	p ¹⁾	n (%)	p ¹⁾
Men						
Total	2193	880 (40.1)	507 (23.1)		187 (36.9)	
Disease numbers						
0	1352 (61.6)	527 (37.7)	330 (23.6)	ref	133 (40.3)	ref
1	591 (27.0)	248 (43.4)	130 (22.8)	0.72	45 (34.6)	0.29
≥2	250 (11.4)	105 (46.9)	47 (21.0)	0.44	9 (19.1)	<0.01
Disease						
Hypertension	572 (26.1)	245 (45.7)	121 (22.6)	0.67	29 (24.0)	<0.01
Diabetes	248 (11.3)	91 (44.2)	53 (25.7)	0.54	16 (30.2)	0.17
Asthma	71 (3.2)	32 (44.4)	14 (19.4)	0.48	4 (28.6)	0.42
Atopic dermatitis	76 (3.5)	27 (36.0)	15 (20.0)	0.58	4 (26.7)	0.42
Cerebrovascular diseases	74 (3.4)	30 (50.0)	10 (16.7)	0.27	3 (30.0)	0.75
COPD	33 (1.5)	15 (53.6)	9 (32.1)	0.37	3 (33.3)	0.75
Cancers	40 (1.8)	23 (46.9)	9 (18.4)	0.49	4 (44.4)	1.00
Mental disorder	107 (4.9)	38 (33.9)	29 (25.9)	0.57	13 (44.8)	0.70
Tobacco-caused diseases						
Yes	433 (19.7)	173 (44.2)	88 (22.5)	0.69	30 (34.1)	0.33
Women						
Total	2239	353 (15.8)	214 (9.6)		68 (31.8)	
Disease numbers						
0	1573 (70.2)	260 (15.2)	159 (9.3)	ref	56 (35.2)	ref
1	509 (22.7)	73 (17.3)	47 (11.1)	0.27	11 (23.4)	0.16
≥2	157 (7.0)	20 (18.7)	8 (7.5)	0.61	1 (12.5)	0.27
Disease						
Hypertension	388 (17.3)	45 (15.8)	23 (8.1)	0.58	1 (4.3)	<0.01
Diabetes	83 (3.7)	17 (25.0)	3 (4.4)	0.20	1 (33.3)	1.00
Asthma	118 (5.3)	12 (16.4)	10 (13.7)	0.22	3 (30.0)	1.000
Atopic dermatitis	90 (4.0)	13 (15.5)	5 (6.0)	0.44	2 (40.0)	1.00
Cerebrovascular diseases	43 (1.9)	3 (11.1)	1 (3.7)	0.51	0 (0.0)	NA
COPD	15 (0.7)	0 (0.0)	1 (9.1)	1.00	0 (0.0)	NA
Cancers	50 (2.2)	5 (10.6)	2 (4.3)	0.31	0 (0.0)	NA
Mental disorder	136 (6.1)	21 (20.4)	18 (17.5)	0.02	6 (33.3)	1.00
Tobacco-caused diseases						
Yes	308 (13.7)	49 (20.8)	31 (13.1)	0.08	0 (0.0)	NA

Cerebrovascular diseases include angina, cardiac infarct, and stroke. Cancer includes lung, oropharyngeal, larynx, esophagus, stomach, liver, pancreas, kidney, urinary tract, bladder cancer and others. Tobacco-related diseases include diabetes, asthma, cerebrovascular diseases, COPD, cancers, and mental disorder.

1) Fisher exact test

2) Analyzed for only current smokers.

3) Data not shown due to low number of current smokers.

Table S5. Adjusted percentage of electronic and heat-not-burn cigarette use according to disease among Japanese people aged 40-69 years from a 2015 internet survey.

	n (%)	Use in the last 30days		Use of > 50 sessions	
		n (%)	p ¹⁾	n (%)	p ¹⁾
Men					
Total	2193	17 (0.8)		44 (2.0)	
Disease numbers					
0	1352 (61.6)	10.6 (0.8)	ref	24 (1.8)	ref
1	591 (27.0)	5.3 (0.9)	1.00	16 (2.7)	0.22
≥2	250 (11.4)	0.9 (0.4)	0.70	3.6 (1.4)	1.00
Disease					
Hypertension	572 (26.1)	1.0 (0.2)	0.12	14 (2.5)	0.37
Diabetes	248 (11.3)	3.7 (1.5)	0.27	2.7 (1.1)	0.79
Asthma	71 (3.2)	0.9 (1.2)	0.46	1.4 (2.0)	1.00
Atopic dermatitis	76 (3.5)	0.9 (1.2)	0.48	1.7 (2.2)	0.64
Cerebrovascular disease	74 (3.4)	0.0 (0.0)	NA	0.7 (0.9)	1.00
COPD	33 (1.5)	0.0 (0.0)	NA	0.0 (0.0)	NA
Cancers	40 (1.8)	0.0 (0.0)	NA	0.0 (0.0)	NA
Mental disorder	107 (4.9)	1.5 (1.4)	0.25	2.3 (2.1)	0.71
Tobacco-caused diseases					
Yes	433 (19.7)	5.2 (1.2)	0.56	7.1 (1.6)	1.00
Women					
Total	2239	9.0 (0.4)		15 (0.7)	
Disease numbers					
0	1573 (70.2)	6.5 (0.4)	ref	14 (0.9)	ref
1	509 (22.7)	2.5 (0.5)	1.00	1.0 (0.2)	0.14
≥2	157 (7.0)	0.0 (0.0)	NA	0.7 (0.5)	1.00
Disease					
Hypertension	388 (17.3)	0.0 (0.0)	NA	1.2 (0.3)	0.33
Diabetes	83 (3.7)	0.0 (0.0)	NA	0.2 (0.2)	1.00
Asthma	118 (5.3)	0.2 (0.2)	1.00	0.7 (0.6)	1.00
Atopic dermatitis	90 (4.0)	0.0 (0.0)	NA	0.0 (0.0)	NA
Cerebrovascular disease	43 (1.9)	0.0 (0.0)	NA	0.0 (0.0)	NA
COPD	15 (0.7)	0.0 (0.0)	NA	0.0 (0.0)	NA
Cancer	50 (2.2)	1.9 (3.9)	0.02	0.0 (0.0)	NA
Mental disorder	136 (6.1)	0.4 (0.3)	1.00	0.5 (0.4)	0.62
Tobacco-caused diseases					
Yes	308 (13.7)	2.5 (0.8)	0.62	1.2 (0.4)	0.07

Cerebrovascular diseases include angina, cardiac infarct, and stroke. Cancer includes lung, oropharyngeal, larynx, esophagus, stomach, liver, pancreas, kidney, urinary tract, bladder cancer and others. Tobacco-related diseases include diabetes, asthma, cerebrovascular diseases, COPD, cancers, and mental disorder.

1) Fisher exact test

Table S6. Dual usage of combustible and non-combustible products (electronic and heat-not-burn cigarettes) among Japanese people aged 40-69 years from a 2015 internet survey.

	dual use n (%)
Men	
Total	7.7 (0.35)
Disease numbers	
0	1.2 (0.09)
1	6.5 (1.1)
≥ 2	0.0 (0.0)
Disease	
Hypertension	5.9 (1.0)
Diabate	0.0 (0.0)
Asthma	0.0 (0.0)
Atopic dermatitis	0.0 (0.0)
Cerebrovascular diseases	0.0 (0.0)
COPD	0.0 (0.0)
Cancers	0.0 (0.0)
Mental disorder	0.0 (0.0)
Tobacco-caused diseases	
Yes	0.0 (0.0)
Women	
Total	0.63 (0.03)
Disease numbers	
0	0.07 (0.004)
1	0.56 (0.11)
≥ 2	0.0 (0.0)
Disease	
Hypertension	0.0 (0.0)
Diabate	0.0 (0.0)
Asthma	0.18 (0.15)
Atopic dermatitis	0.0 (0.0)
Cerebrovascular diseases	0.0 (0.0)
COPD	0.0 (0.0)
Cancers	0.0 (0.0)
Mental disorder	0.38 (0.28)
Tobacco-caused diseases	
Yes	0.0 (0.0)

Cerebrovascular diseases include angina, cardiac infarct, and stroke. Cancer includes lung, oropharyngeal, larynx, esophagus, stomach, liver, pancreas, kidney, urinary tract, and bladder cancer. Tobacco-related diseases include diabetes, asthma, cerebrovascular diseases, COPD, cancers, and mental disorder.

Table S7. Adjusted percentages of electronic and heat-not-burn cigarette use according to disease (by smoking habits) among Japanese people aged 40-69 years from a 2015 internet survey

	n (%)	ever use				current use			
		e-cigarettes		heat-not-burn tobacco		e-cigarettes		heat-not-burn tobacco	
		n (%)	p ¹⁾	n (%)	p ¹⁾	n (%)	p ¹⁾	n (%)	p ¹⁾
Current smoker									
Total	980	237 (24.2)		1.7 (0.17)		8.4 (0.9)		0.8 (0.08)	
Disease numbers									
0	638 (65.1)	100 (15.7)	ref	1.0 (0.16)	ref	1.3 (0.2)	ref	0.4 (0.05)	ref
1	245 (25.0)	28 (11.5)	0.13	0.7 (0.27)	0.48	7.1 (2.9)	<0.01	0.5 (0.20)	NA
≥2	96 (9.8)	10 (10.3)	0.22	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Disease									
Hypertension	218 (22.2)	29 (13.2)	0.44	0.5 (0.23)	NA	5.9 (2.7)	<0.01	0.5 (0.23)	NA
Diabetes	81 (8.3)	7.4 (9.1)	0.10	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Asthma	33 (3.4)	3.0 (8.9)	0.46	0.2 (0.54)	NA	0.2 (0.5)	NA	0.0 (0.0)	NA
Atopic dermatitis	38 (3.9)	1.5 (3.8)	0.03	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Cerebrovascular disease	20 (2.1)	0.6 (3.0)	0.23	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
COPD	13 (1.3)	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Cancers	14 (1.4)	4.6 (33.6)	0.06	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Mental disorder	63 (6.4)	3.9 (6.1)	0.06	0.0 (0.0)	NA	1.0 (1.6)	0.17	0.0 (0.0)	NA
depression	43 (4.4)	2.7 (6.1)	0.13	0.0 (0.0)	NA	0.4 (0.9)	NA	0.0 (0.0)	NA
other mental diseases	33 (3.3)	2.0 (6.1)	0.21	0.0 (0.0)	NA	1.0 (3.0)	0.10	0.0 (0.0)	NA
Tobacco-caused diseases									
Yes	177 (18.1)	17 (9.7)	0.052	0.2 (0.10)	NA	1.2 (0.7)	0.39	0.0 (0.0)	NA
Former smoker									
Total	1106	48 (4.4)		0.7 (0.06)		0.7 (0.1)		0.0 (0.0)	
Disease numbers									
0	685 (69.9)	35 (5.1)	ref	0.7 (0.10)	ref	0.3 (0.0)	ref	0.0 (0.0)	ref
1	303 (31.0)	12 (3.8)	0.52	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
≥2	117 (11.9)	1.6 (1.4)	0.15	0.0 (0.0)	NA	0.4 (0.4)	NA	0.0 (0.0)	NA
Disease									
Hypertension	282 (28.8)	9.2 (3.2)	0.24	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Diabetes	102 (10.4)	1.4 (1.3)	0.07	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Asthma	37 (3.8)	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Atopic dermatitis	29 (2.9)	0.2 (0.8)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Cerebrovascular disease	33 (3.4)	1.4 (4.3)	1.00	0.0 (0.0)	NA	0.4 (1.3)	NA	0.0 (0.0)	NA
COPD	16 (1.6)	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Cancer	20 (2.1)	0.4 (2.1)	NA	0.0 (0.0)	NA	0.4 (2.1)	NA	0.0 (0.0)	NA
Mental disorder	46 (4.7)	2.4 (5.3)	1.00	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
depression	26 (2.6)	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
other mental diseases	27 (2.8)	2.4 (9.0)	0.65	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Tobacco-caused diseases									
Yes	204 (20.8)	5.0 (2.5)	0.13	0.0 (0.0)	NA	0.4 (0.2)	NA	0.0 (0.0)	NA
Never smoker									
Total	2347	50 (2.1)		0.0 (0.0)		2.8 (0.1)		0.0 (0.0)	
Disease numbers									
0	1601 (163.4)	25 (1.6)	ref	0.0 (0.0)	ref	0.0 (0.0)	ref	0.0 (0.0)	ref
1	551 (56.3)	16 (2.9)	0.07	0.0 (0.0)	NA	2.0 (0.4)	0.07	0.0 (0.0)	NA
≥2	194 (19.8)	9.2 (4.7)	<0.01	0.0 (0.0)	NA	0.9 (0.5)	0.11	0.0 (0.0)	NA
Disease									
Hypertension	460 (47.0)	12 (2.6)	0.16	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Diabetes	147 (15.0)	13 (9.1)	<0.01	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Asthma	118 (12.1)	7.1 (6.0)	<0.01	0.0 (0.0)	NA	0.9 (0.7)	0.07	0.0 (0.0)	NA
Atopic dermatitis	99 (10.1)	8.2 (8.3)	<0.01	0.0 (0.0)	NA	0.9 (0.9)	0.06	0.0 (0.0)	NA
Cerebrovascular disease	64 (6.5)	0.0 (0.0)	0.62	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
COPD	19 (1.9)	0.0 (0.0)	1.00	0.0 (0.0)	NA	0.0 (0.0)	NA	0.0 (0.0)	NA
Cancer	55 (5.6)	2.6 (4.6)	0.07	0.0 (0.0)	NA	2.0 (3.5)	<0.01	0.0 (0.0)	NA
Mental disorder	134 (13.7)	11 (8.6)	<0.01	0.0 (0.0)	NA	0.9 (0.7)	0.08	0.0 (0.0)	NA
depression	108 (11.0)	7.4 (6.9)	<0.01	0.0 (0.0)	NA	0.9 (0.8)	0.06	0.0 (0.0)	NA
other mental diseases	66 (6.7)	4.9 (7.5)	<0.01	0.0 (0.0)	NA	0.9 (1.3)	0.04	0.0 (0.0)	NA
Tobacco-caused diseases									
Yes	360 (36.7)	21 (5.7)	<0.01	0.0 (0.0)	NA	2.8 (0.8)	<0.01	0.0 (0.0)	NA

Cerebrovascular diseases include angina, cardiac infarct, and stroke. Cancer includes lung, oropharyngeal, larynx, esophagus, stomach, liver, pancreas, kidney, urinary tract, bladder cancer and others. Tobacco-related diseases include diabetes, asthma, cerebrovascular diseases, COPD, cancers, and mental disorder.

1) Fisher exact test

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