

Table 2.19. Cohort studies on tobacco smoking and oesophageal cancer

Reference, Country and years of study	Subjects	Organ site (ICD code)	Number of cases	Smoking categories	Relative risk (95%CI)*	Comments
Tran <i>et al.</i> (2005) China, 1984-2000	29584 Linxian General Population from 40-69 years of age at baseline	Oesophageal	1958	<i>Ever smoker</i>		
				Cigarette	1.34 (1.16–1.54)	
				Pipe	1.31 (1.13–1.53)	
				Cigarette or pipe	1.33 (1.15–1.53)	
				Current cigarette smoker	1.32 (1.15–1.51)	
				Current pipe smoker	1.33 (0.94–1.88)	
				<i>Cigarette intensity (years, adjusted for cigarette duration)</i>		
				0	1.0	
				1 <7	1.06 (0.79–1.42)	
				7-9	1.61 (1.06–2.44)	
			10-19	1.27 (0.95–1.70)		
			≥20	1.12 (0.83–1.51)		
			<i>Cigarette duration (years, adjusted for cigarette intensity)</i>			
			0	1.0		
			1 <19	1.31 (1.03–1.68)		
			19-27	1.25 (0.97–1.61)		
			28-35	1.34 (1.07–1.69)		
			≥36	1.60 (1.26–2.03)		
			<i>Pipe intensity (years, adjusted for pipe duration)</i>			
			0	1.0		
1 <	1.10 (0.83–1.44)					
3-4	1.28 (0.90–1.82)					
5-6	0.95 (0.70–1.29)					
≥7	0.89 (0.62–1.28)					
<i>Pipe duration (years, adjusted for pipe intensity)</i>						
0	1.0					
1 <4	1.28 (0.94–1.76)					
4-10	1.11 (0.79–1.55)					
11-27	1.28 (0.92–1.78)					
≥28	1.97 (1.44–2.68)					
<i>Total smoking duration (cigarette and pipe combined) (years, adjusted for cigarette and pipe intensity)</i>						
0	1.0					
1 <20	1.19 (0.92–1.53)					
20-28	1.29 (1.01–1.66)					
29-36	1.31 (1.04–1.65)					
≥37	1.52 (1.19–1.94)					
			1958			

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Jee <i>et al.</i> (2004) Korea 1993–2001	1212906 adults included in the Korean Medical Insurance Corporation	Oesophageal	818 cases 611 deaths	<i>Incidence</i>		
				Never smokers	1.0	
				Former smokers	1.6 (1.2–2.1)	
				Current smokers	3.1 (2.4–4.0)	
				<i>Mortality</i>		
				Never smokers	1.0	
				Former smokers	1.9 (1.4–2.7)	
Current smokers	3.6 (2.6–4.9)					
Sakata <i>et al.</i> (2005) Japan 1988–1999	110792 subjects from 45 areas throughout Japan aged between 40 to 79 years at baseline	Oesophageal ICD-9 150.0 to 150.9 ICD-10 C15.0 to 15.9	100	Non-smokers	1.0	Mortality cohort. Hazards ratios adjusted for age and center
				Ex smokers	2.71 (1.16–6.36)	
				Current smokers	4.36 (2.00–9.52)	
				<i>Age at start of smoking</i>		
				25+	3.85 (1.54–9.64)	
				20-24	4.89 (1.98–12.07)	
				10-19	3.24 (1.06–9.89)	
				<i>Cigarettes smoked per day</i>		
				1-10	5.11 (2.07–12.65)	
				11-20	4.42 (1.97–9.92)	
				21-30	3.19 (1.11–9.19)	
				31+	4.33 (1.25–14.99)	
				<i>Years of smoking</i>		
				<25.0	2.05 (0.42–9.98)	
				25.1-35.0	3.54 (1.27–9.89)	
				35.1-45.0	5.34 (2.32–12.30)	
				45.1	4.85 (1.62–14.530)	
<i>Cumulative smoking (pack-years)</i>						
1-19.9	3.24 (1.06–9.89)					
20.0-29.9	4.89 (1.98–12.07)					
30.0-39.9	3.85 (1.54–9.64)					
40.0+	4.86 (2.11–11.21)					

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Yun <i>et al.</i> (2005) Korea 1996-2000	733134 Korean men aged 30 years or older	Oesophagus	163 incident cases	Never Former Current <i>Current, cigarettes smoked per day</i> 1-9 10-19 ≥20 <i>Current smokers</i> <i>Years of smoking duration</i> Never 1-19 20-29 30 <i>Former smokers</i> Never 1-19 20-29 30	1.0 2.22 (1.07-4.64) 4.46 (2.32-8.57) 3.65 (1.65-8.09) 4.71 (2.42-9.18) 4.16 (1.96-8.82) 1.0 4.21 (1.96-9.03) 3.64 (1.77-7.46) 5.07 (2.56-10.1) 1.0 2.00 (0.89-4.51) 2.97 (1.13-7.82) 3.85 (1.31-11.4)	Adjusted for age, place of residence, alcohol consumption, BMI, leisure-time physical activity frequency, preferences for vegetables and meats, and frequency of meat consumption
Doll <i>et al.</i> (2005) UK 1951-2001	34439 men British doctors	Oesophageal	207	<i>Cigarettes smokers</i> Never Former Current <i>Cigarettes per day</i> 1-14 15-24 ≥25 <i>Other smokers</i> Former Current	Mortality rate 5.7 20.1 34.4 21.2 34.4 50.0 18.9 25.1	Annual mortality rate for 100.000 men
Ishikawa <i>et al.</i> (2006) Japan Cohort 1: 1984-1992 Cohort 2: 1990-1997	Cohort 1: 9008 men from three municipalities of Miyagi Prefecture older than 40 years Cohort 2: 17715 men from three municipalities of Miyagi Prefecture older than 40 years	Oesophageal ICD-O 15.0 to 15.9	Cohort 1: 38 Cohort 2: 40	Cohort 1 Never Former <i>Current smoking</i> 1-19 cigarettes/day ≥20 cigarettes/day Cohort 2 Never Former <i>Current smoking</i> 1-19 cigarettes/day ≥20 cigarettes/day	1.0 2.49 (0.50-12.44) 5.39 (1.18-24.61) 5.48 (1.24-24.18) 1.0 1.72 (0.33-8.92) 4.63 (1.01-21.30) 4.73 (1.10-20.34)	Hazards ratios adjusted for age, alcohol drinking, green tea consumption, coffee consumption, and black tea consumption

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Freedman <i>et al.</i> (2007b) USA 1995–2000	474606 US participants	Oesophageal ICD-O 15.0 to 15.9	97 Squamous cell carcinoma 205 Adeno-carcinoma	<i>Squamous cell carcinoma</i>		Hazards ratios adjusted for the continuous variables: age at entry into the cohort, fruit intake, vegetable intake, and total energy; as well as the categorical variables: sex, body mass index, education, alcohol intake, vigorous physical activity, and usual daily physical activity
				Never	1.0	
				Former	4.35 (1.95-9.72)	
				Current	9.27 (4.04-21.29)	
				<i>Pipe or cigar smoking status</i>		
				Never	1.0	
				Ever	1.04 (0.61-1.77)	
				<i>Quit smoking status</i>		
				Never smoked	1.0	
				Stopped ≥10 years ago	3.24 (1.40-7.49)	
				Stopped 5–9 years ago	6.70 (2.57-17.47)	
				Stopped 1–4 years ago	10.30 (3.88-27.35)	
				Current smokers	9.52 (4.14-21.85)	
				<i>Cigarette smoke dose per day</i>		
				0 packs	1.0	
				> 0-1 packs	5.30 (2.38–11.83)	
				>1-2 packs	6.02 (2.61–13.90)	
				>2 packs	6.17 (2.28–16.66)	
				<i>Smoke-quit dose</i>		
				Never smoked	1.0	
				Quit ≤1 pack/day	2.79 (1.15–6.77)	
				Quit >1 pack/day	6.27 (2.71–14.48)	
				Currently smoking ≤1 pack/day	11.50 (4.95–26.72)	
				Currently smoking >1 pack/day	5.80 (2.12–15.84)	
				<i>Adenocarcinoma</i>		
				Never	1.0	
				Former	2.82 (1.83–4.34)	
Current	3.70 (2.20–6.22)					
<i>Pipe or cigar smoking status</i>						
Never	1.0					
Ever	1.06 (0.77-1.44)					
<i>Quit smoking status</i>						
Never smoked	1.0					
Stopped ≥10 years ago	2.67 (1.72–4.16)					
Stopped 5-9 years ago	4.04 (2.33–7.00)					
Stopped 1-4 years ago	2.21 (0.99–4.93)					
Current smokers	3.71 (2.20–6.25)					
<i>Cigarette smoke dose per day</i>						
0 packs	1.0					
> 0-1 packs	2.57 (1.63–4.04)					
> 1-2 packs	3.69 (2.33–5.84)					
> 2 packs	2.64 (1.45–4.81)					

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Freedman <i>et al.</i> (2007b) USA 1995-2000 (contd)	474606 US participants	Oesophageal ICD-O 15.0 to 15.9	97 Squamous cell carcinoma 205 Adeno-carcinoma	<i>Smoke-quit dose</i> Never smoked Quit ≤1 pack/day Quit >1 pack/day Currently smoking ≤1 pack/day Currently smoking >1 pack/day	1.0 2.31 (1.44–3.72) 3.37 (2.14–5.33) 3.65 (2.04–6.55) 3.85 (2.02–7.36)	Hazards ratios adjusted for the continuous variables: age at entry into the cohort, fruit intake, vegetable intake, and total energy; as well as the categorical variables: sex, body mass index, education, alcohol intake, vigorous physical activity, and usual daily physical activity
Fan <i>et al.</i> (2008) China 1986-2006	18244 men from four small geographically defined communities from a wide area of Shanghai	Oesophageal	101	Never Ever Former Current <i>Age at starting to smoke</i> 25+ 20-24 <20 <i>Number years of smoking</i> <40 40+ <i>Number cigarettes per day</i> <20 20+ <i>Number pack-years of cigarettes</i> <30 30-59 60+	1.0 1.36 (0.83-2.21) 0.62 (0.21-1.80) 1.46 (0.89-2.39) 1.02 (0.56-1.86) 1.56 (0.88-2.75) 1.72 (0.95-3.12) 1.17 (0.70-1.96) 2.06 (1.11-3.82) 1.26 (0.73-2.18) 1.45 (0.85-2.47) 1.33 (0.79-2.23) 1.40 (0.79-2.48) 1.49 (0.54-4.07)	Of 68 Oesophageal squamous cell carcinoma, 62 were histopathologically confirmed and 6 cases were confirmed only based on cytology Hazards ratios adjusted for age at interview, year of interview, and neighborhood of residence at recruitment

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Ishiguro <i>et al.</i> (2009) Japan 1990-2004	44970 men from areas covered by Public Health Centers in 10 cities of Japan	Oesophageal ICD-O 15.0 to 15.9	215	Never	1.0	Hazards ratios adjusted for age at interview, study area, body mass index, preference for hot foods and drinks, ethanol consumption, flushing response
				Former	3.27 (1.78-5.99)	
				Current	3.69 (2.07-6.58)	
				<i>Pack-years</i>		
				<20	2.07 (1.07-4.00)	
				20-29	2.71 (1.44-5.11)	
				30-39	2.97 (1.61-5.48)	
				40+	4.81 (2.72-8.53)	
				<i>Cigarettes/day in current smokers</i>		
				<20	2.77 (1.43-5.34)	
20-39	4.00 (2.21-7.22)					
40+	4.76 (2.31-9.81)					