

**Table 2.9. Case-control studies on tobacco smoking and oral cancer: intensity, duration and age at starting smoking**

Reference Country and years of study	Cancer subsite ICD code	No of cases	No of controls	Smoking categories	Relative risk (95%CI)	Comments
Pacella-Norman <i>et al.</i> (2002) South Africa 1995-99	Oral cavity			<b>Males</b>		OR adjusted for age, place of birth, education, work category, heating fuel, snuff use and alcohol consumption
				<i>Oral</i>		
		7	317	Non-smokers	1.0	
		24	222	Ex-smokers	4.1 (1.6-10.2)	
		56	263	Current smokers; all	7.5 (3.2-17.8)	
		33	201	1-14 g/day	6.1 (2.5-14.8)	
		21	58	15+ g/day	12.5 (4.6-33.5)	
				<b>Females</b>		
				<i>Oral</i>		
		16	1143	Non-smokers	1.0	
		8	104	Ex-smokers	3.1 (1.2-8.0)	
		17	113	Current smokers; all	3.9 (1.6-9.9)	
		11	97	1-14 g/day	3.9 (1.5-10.3)	
		6	11	15+ g/day	6.2 (0.9-44.2)	
Balaram <i>et al.</i> (2002) India 1996-99	Oral cavity	86	127	Never smoker	1.0	
		59	50	Former smoker	1.38 (0.78-2.47)	
				<i>Current smoker</i>		
		28	40	Cigarettes only	1.08 (0.56-2.09)	
		8	1	Cigars only	10.17 (1.12-92.18)	
				<i>Age started smoking (years)</i>		
		54	34	≥23	1.0	
		63	46	20-22	0.82 (0.42-1.61)	
		47	35	<20	0.84 (0.41-1.73)	

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Znaor <i>et al.</i> (2003) India 1993-99	Oral cavity	424	1799	Never smokers	1.0	Adjusted for age, center, education level, alcohol consumption and chewing
		188	723	<i>Duration of smoking (yr)</i>		
		276	474	< 20	1.21 (0.95-1.52)	
		382	384	20-29	1.69 (1.36-2.11)	
		293	258	30-39	1.91 (1.53-2.38)	
				≥ 40	1.60 (1.25-2.06)	
				<i>Average daily amount of tobacco (g)</i>		
		631	1132	< 9	1.41 (1.18-1.69)	
		376	534	10-19	1.82 (1.47-2.24)	
		131	162	≥ 20	1.99 (1.47-2.68)	
				<i>Type of tobacco</i>		
		207	789	Cigarette only	0.99 (0.79-1.23)	
		474	548	Bidi only	2.15 (1.75-2.63)	
		366	357	Cigarette and bidi only	1.49 (1.18-1.88)	
Applebaum <i>et al.</i> (2007) USA 1999-2003	Oral cavity	43	83	Chutta only	2.28 (1.50-3.45)	Models also controlled for sex, age, race, and education
		32	18	Cigar/cheroot only	4.72 (2.41-9.25)	
		16	27	Other combinations	1.56 (0.75-3.25)	
				<i>Smoking, pack-years</i>		
		44	182	None	1.0	
		38	152	> 0 to < 20	0.9 (0.6-1.6)	
		52	123	20 to <45	1.4 (0.8-2.4)	
		53	92	≥ 45	1.8 (1.0-3.2)	

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De Stefani <i>et al.</i> (2007) Uruguay 1988- 2000	Mouth excluded lip	8	374	Never smokers	1.0	Adjusted for age, residence, urban/rural status, hospital, year at diagnosis, education, family history of cancer among first-degree relatives, occupation, total vegetables and fruits consumption, mate intake and alcohol drinking
		66	488	Former smokers	4.3 (2.0-9.3)	
		261	639	Current smokers	11.0 (6.0-25.9)	
		327	1127	Ever smokers	7.7 (4.2-18.0)	
				<i>Cigarettes/day</i>		
		8	374	Never smokers	1.0	
		12	218	1-9	2.1 (0.8-5.3)	
		59	322	10-19	6.2 (2.9-13.4)	
		111	320	20-29	10.8 (5.1-22.9)	
		145	267	30+	14.5 (6.8-30.7)	
				<i>Years of smoking</i>		
		8	374	Never smokers	1.0	
		24	266	1-29	2.6 (1.1-6.1)	
		76	283	30-39	7.7 (3.5-16.8)	
		127	326	40-49	12.6 (5.9-27.0)	
		100	252	50+	14.7 (6.7-32.3)	
				<i>Pack-years</i>		
		8	374	Never smokers	1.0	
		49	511	1-29	3.2 (1.5-7.0)	
		48	143	30-39	10.1 (4.6-22.4)	
		45	143	40-49	9.9 (4.3-21.1)	
		185	330	50+	15.1 (7.2-31.8)	

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Hashibe <i>et al.</i> (2007c) INHANCE consortium Europe, North America, South/Central America, International 1984-2006	Oral cavity:C00.3 -C00.9, C02.0-C02.3, C03.0, C03.1, C03- 9, C04.0, C04.1, C04.8, C04.9, C05.0, C06.0-C06.2, C06.8 and C06.9	505 206 505 67 82 31 15 6 505 27 22 45 46 62	2577 1425 2577 481 601 154 102 60 2577 200 269 362 324 249	<b>Never drinkers</b> <b>Oral cavity</b> <i>Cigarette smoking</i> Never Ever <i>Frequency, cigarettes/day</i> Never smokers 1-10 11-20 21-30 31-40 > 40 <i>Duration, y</i> Never smokers 1-10 11-20 21-30 31-40 >40	1.0 1.35 (0.90-2.01) 1.0 1.38 (0.80-2.38) 1.43 (0.85-2.38) 1.61 (0.31-8.47) 2.92 (0.91-9.44) 1.40 (0.30-6.61) 1.0 1.37 (0.84-2.23) 1.16 (0.64-2.10) 1.32 (0.92-1.91) 2.28 (1.19-4.37) 3.23 (1.54-6.77)	Random-effects model used. Study-specific odds ratios were adjusted for age, sex, race/ethnicity, education level, study center, years of cigar smoking, and years of pipe smoking
Subapriya <i>et al.</i> (2007) India 1991– 2003	Oral cavity: buccal mucosa, alveolus, tongue, lip, palate, maxilla, mandible, antrum, floor of the mouth	268 120 84 36 31 89 11 16 20 25 48	345 43 22 21 26 17 7 8 8 9 11	Never smoker Ever smoker <i>Smoking type</i> Bidi Cigarettes <i>Frequency (g/day)</i> <5 ≥5 <i>Duration (years)</i> <10 11–20 21–30 31–40 >40	1.0 (p<0.001) 3.63 4.63 (p<0.001) 2.33 1.62 (p<0.001) 6.11 2.13 (p<0.001) 2.47 3.25 3.56 3.89	

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Muwonge <i>et al.</i> (2008) India 1996– 2004	Oral cavity ICD-10 C001-C009, C020-C023, C028-C031, C039-C041, C048-C050, C059-C062, C068, C069	55	335	Never smoker	1.0	Analyses of frequency, duration and pack- years include bidi smokers
		108	480	Ever smoker	1.2 (0.8–1.8)	
		14	72	Former smoker	1.0 (0.5–2.1)	
		94	408	Current smoker	1.2 (0.8–1.8)	
		19	113	Cigarettes only	1.0 (0.6–1.9)	
				<i>Frequency (times/day)</i>		
		39	170	1–10	1.3 (0.8–2.1)	
		32	167	11–20	1.0 (0.6–1.7)	
		33	118	>20	1.6 (0.9–2.9)	
				<i>Duration (years)</i>		
		19	96	<20	1.0 (0.5–2.0)	
		55	232	20–39	1.3 (0.8–2.1)	
		30	124	40+	1.4 (0.8–2.5)	
				<i>Pack-years</i>		
		66	290	<20	1.2 (0.8–1.9)	
		28	122	20–39	1.4 (0.8–2.4)	
		10	39	40+	1.3 (0.6–3.0)	