

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 | | | Males | | 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) | |
| | | | | Females | | |
| | | | | <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) | | | |

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 |
|---|-------------------------------|--------------------|-------------------|--|-----------------------|--|
| 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) | |
| 43 | 83 | Chutta only | 2.28 (1.50-3.45) | | | |
| 32 | 18 | Cigar/cheroot only | 4.72 (2.41-9.25) | | | |
| 16 | 27 | Other combinations | 1.56 (0.75-3.25) | | | |
| Applebaum <i>et al.</i> (2007) USA 1999-2003 | Oral cavity | | | <i>Smoking, pack-years</i> | | Models also controlled for sex, age, race, and education |
| | | 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) | |

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 |
|---|-------------------------------|----------------|-------------------|-------------------------|-----------------------|---|
| 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) | | | |

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 |
|---|---|--|--|--------------------------|--|--|
| 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 | 2577 1425 | Never drinkers | 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) 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 | 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 |
| | | | | Oral cavity | | |
| | | <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 | | | | | | |
| 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 | 345 43 | Never smoker | | |
| | | | | Ever smoker | | |
| | | 84 36 31 89 11 16 20 25 48 | 22 21 26 17 7 8 8 9 11 | <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 | | | | | | |

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 |
|--|--|----------------|-------------------|------------------------------|-----------------------|--|
| Muwonge <i>et al.</i> (2008) India 1996– 2004 | Oral cavity ICD-10 | 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) | |
| | C001-C009, C020-C023, C028-C031, C039-C041, C048-C050, C059-C062, C068, C069 | 14 | 72 | Former smoker | 1.0 (0.5–2.1) | |
| | | 94 | 408 | Current smoker | 1.2 (0.8–1.8) | |
| | Cigarettes only | 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) | | |