

Table 2.2. Case-control studies of chewing betel quid and cancer of the oral cavity published after IARC (1985)

Reference, study location and period	Organ site (ICD code)	Characteristics of cases	Characteristics of controls	Exposure assessment	Exposure categories	Relative risk (95% CI)*	Adjustment for potential confounders	Comments
Nandakumar <i>et al.</i> (1990) Bangalore, India, 1982-84	Oral cavity (exc base of tongue) (140, 141.1-9, 145)	348 (115 men, 233 women) from Bangalore population based Cancer Registry, average age 54.8 years, 51/399 (13%) in the data base with incomplete records were excluded; over 93% histologically confirmed	348 Population based selected among non cancer cases attending one hospital. Matched by age, gender & location	Interviewer-administered standardized questionnaire	Non chewer Chewer (M) Chewer (F) Chewer (M & F)	1.0 4.0 (1.8-8.9) 30.4 (12.6-73.4) 14.6 (8.2-25.9)	Risk of one factor was adjusted for the risks of other factors.	
Sankaranarayanan <i>et al</i> (1989a) Trivandrum, Kerala, India 1983-84	Gingiva (143.0, 143.1)	187 (109 men, 78 women) from Hospital Cancer Registry at a Regional Cancer Centre;	895 (546 men, 349 women) Hospital based excluding malignancies	Interviewer-administered standardized questionnaire	Non Chewer (M) Chewer (M) Non Chewer (F) Chewer (F)	1 8.8 (3.6-21.5) 1 10.9 (4.6-25.8)	Age, smoking and drinking Age	Interaction with bidi smoking and alcohol drinking computed from counts in authors' tables A substantial number of women had no other habits
Sankaranarayanan <i>et al</i> (1990a) Trivandrum, Kerala, India 1983-84	Buccal, labial (145.0, 0.1,0.6, 140.3,0.4)	414 (250 men, 164 women) from Hospital Cancer Registry at a Regional Cancer Centre	895 Hospital based excluding malignancies	Interviewer-administered standardized questionnaire	Non Chewer (M) Chewer (M) Non Chewer (F) Chewer (F)	1 14.3 (8.2-24.8) 1 7.1 (4.2-12.1)	Age, smoking and drinking	Interaction with bidi smoking and alcohol drinking computed from counts in authors' tables A substantial number of women had no other habits

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Sankaranarayanan <i>et al</i> (1989b) Trivandrum, Kerala, India 1983-84	Tongue and floor of mouth (141.1-141.4,144)	228 (158 men, 70 women) from Hospital Cancer Registry at a Regional Cancer Centre;	453 (314 men, 139 women) Hospital based excluding malignancies	Interviewer-administered standardized questionnaire	Non Chewer (M) Chewer (M) Non Chewer (F) Chewer (F)	1 6.1 (3.3-11.4) 1 6.3 (3.2-12.7)	Age, smoking	Interaction with bidi smoking and alcohol drinking computed from counts in authors' tables A substantial number of women had no other habits
Rao and Desai (1998) Mumbai, India 1980-84	Tongue (141.0-.9)	636 men (142 ant tongue, , 495 base of tongue) from Tata Memorial Hospital	635 Hospital based excluding malignancies (Unmatched)	Interviewer-administered standardized questionnaire	Non Chewer Chewer (Ant Tongue) Chewer (Base of Tongue)	1 1.67 (1.12-2.51) 0.76 (0.96-5.27)	Smoking, alcohol, literacy, diet	
Rao <i>et al</i> (1994) Mumbai, India 1980-84	Mouth (excluding Soft Palate, base of Tongue)	713 men , from Tata Memorial Hospital	635 Hospital based excluding malignancies (Unmatched)	Interviewer-administered standardized questionnaire	Non Chewer Chewer	1 2.1(2.1-3.4)	Smoking, alcohol, literacy, diet	
Wasnik <i>et al.</i> (1998) Nagpur, India	Oropharynx	123 (men & women)	246 (men & women) 123 non-cancer patients and 123 cancers from other sites		Non chewer Chewer	1 8.0 (4.9-14.8)	Smoking, alcohol drinking occupation	

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Dikshit & Kanhere (2000) Bhopal, India 1986-1992	Oral Cavity Lip, anterior tongue, gingiva, floor of mouth, buccal palate, retro molar	148	260	Interviewer-administered standardized questionnaire	Non chewer Chewer	1 5.8 (3.6-9.5)	Age, Smoking,	
Merchant <i>et al</i> (2000) Karachi, Pakistan 1996-1998	Oral Cavity	79 (both men & women) from 3 Hospitals	149 (both men & women) Hospital patients	Interviewer-administered standardized questionnaire	Non chewer Chewer	1 8.4 (2.3-30.6)	Smoking, naswar, alcohol	
Balaram <i>et al</i> (2002) Southern, India 1996-1999	Oral Cavity	414 (309 men, 282 women) from 3 Hospitals	414 (292 men, 290 women) from Hospital out patients, relatives or friends accompanying patients attending same 3 hospitals (free from cancer)	Interviewer-administered standardized questionnaire	Non Chewer (M) Chewer (M) Non Chewer (F) Chewer (F)	1 6.1 (3.8-9.7) 1 45.9 (25.0-84.1)	Smoking, alcohol drinking Alcohol drinking	
Znaor <i>et al</i> (2003) Chennai, India 1993-1999	Oral Cavity Lip(140), Tongue (141) Mouth (143-5)	1563 men, histologically confirmed	3638 men cancer patients (non-tobacco related cancers) & hospital visitors	Interviewer-administered standardized questionnaire	Non Chewer Chewer Oral cavity Tongue Mouth	1 5.05 (4.26-5.97) 2.7 (2.2-3.4) 7.0 (5.7-8.5)	Smoking and alcohol drinking	

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Subapriya <i>et al.</i> (2007) Tamil Nadu, India 1991-2003	Oral cavity	388 (202 men, 186 women) One Hospital	388 Interview response (77%)	Interviewer-administered standardized questionnaire	Non Chewer Chewers (betal quid + tobacco)	1 3.19		Significant interaction with smoking and alcohol use.
Muwonge <i>et al.</i> (2008) Trivandrum, India	Oral cavity	282 (163 men, 119 women) cases detected at a screening programme, histologically confirmed	1410 (815 men, 595 women) non cancer subjects from the same population	Interviewer-administered standardized questionnaire	Never chewed Chewer M (betal quid + tobacco) Chewer F (betal quid + tobacco)	1 3.4 (2.2-5.2) 11.8 (6.0-23.3)	Education, religion, smoking & alcohol drinking	Nested case-control analysis Significant interaction with smoking and alcohol use.

*CI, Confidence interval