

Table 2.15 Case-control studies of nasal use of smokeless tobacco and cancers of the oral cavity and pharynx

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
Sankaranarayanan et al. (1989a), India, 1983–84	Tongue (ICD-9 141.1, 141.2, 141.3, 141.4), floor of mouth (ICD-9, 144)	158 men; biopsy-proved cases of cancer from one hospital Response rate not stated;% histologically confirmed not stated.	314 male patients with non-malignant conditions at sites other than head and neck; matched by age, religion. Response rate not stated	Interviews by trained social workers	<i>Snuff inhalation</i>		Age	Home grown tobacco powder, inhaled deeply. No evidence of oral use.
					No	1.0		
					Yes	3.0 (0.9–9.6)		
					<i>Snuff inhalation</i>			
	Never	1.0						
	< 100 unit years	10.0 (1.2–86.1)						
	≥ 100 unit years	1.1 (0.2–6.2)						
Sankaranarayanan et al. (1989b), India, 1983–84	Gingiva (ICD-9, 143.0, 143.1)	109 men from one hospital Response rate not stated;% histologically confirmed not stated.	546 male patients with non-malignant conditions at sites other than head and neck Response rate not stated	Interviews by trained social workers	<i>Snuff inhalation</i>		<i>Bidis</i> , alcoholic beverages, betel quid	Home grown tobacco powder, inhaled deeply. No evidence of oral use.
					No	1.0		
					Yes	3.0 (0.7–12.6)		
					Occasional	3.8 (1.05–13.5)		
	Daily	3.9 (1.2–12.7)						
			Crude					
Sankaranarayanan et al. (1990a), India, 1983–84	(Buccal mucosa ICD-9, 145.0, 145.1, 145.6), labial mucosa (ICD-9, 140.3, 140.4)	250 men from one hospital diagnosed in 1983 and 1984. Response rate not stated;% histologically confirmed not stated.	546 male patients with non-malignant conditions at sites other than head and neck during same time period. Response rate not stated	Interviews by trained social workers	<i>Snuff inhalation</i>		<i>Bidis</i> , alcoholic beverages, betel quid	Home grown tobacco powder, inhaled deeply. No evidence of oral use.
					No	1.0		
					Yes	2.9 (0.98–8.8)		
					<i>Snuff inhalation</i>			
	Never	1.0						
	< 100 unit years	15.7 (2.0–125.3)						
	≥ 100 unit years	2.0 (0.6–6.6)	Age					

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Sapkota et al. (2007) Ahmedabad, Bhopal, Kolkata, and Chennai 2001–2004	Hypopharyngeal cancers (ICD0–2 codes C12, C13) laryngeal cancers (ICDO-2 codes 32.0–32.9)	1024 invasive cancer cases: 513 hypopharyngeal (430 men and 83 women) and 511 laryngeal ((glottis = 187)(170 men and 80 women), C32.1 (supraglottic = 12)(111 men and 9 women) and C32.2-C32.9 (other larynx = 213) (197 men and 116 women) any age.	718 (607 men and 111 women) matched on age (+/- 5 years), sex and geographical area of residency. 19% were hospital-based patients with diseases not related to alcohol or tobacco consumption, 81% were visitors to patients at hospital Response rate not stated.	Standardized questionnaire administered by trained staff at hospital	<i>Never chew non-tobacco product, never chew tobacco product</i>	1	Center, age, sex, SES, alcohol consumption, and tobacco pack years.	Snuffing is oral or nasal use of tobacco products; the most common in this region is naswar. Cannot distinguish nasal from oral snuffing.
					Never snuffing Ever snuffing	2.25 (0.99–5.13)		
					<i>Never chew non-tobacco product, never chew tobacco product, and never smokers</i>	1	Center, age, sex, SES, alcohol consumption	
					Never snuffing Ever snuffing	2.85 (1.15–7.08)		