

Table 2.8. Case-control studies of chewing betel quid and oral precancer published after IARC (2004)

Reference, study location and period	Characteristics of cases	Characteristics of controls	Disease category Oral Potentially malignant disorders, Leukoplakia, Erythroplakia, Oral submucous fibrosis	Exposure categories	Relative risk (95% CI)*	Adjustment for potential confounders	Comments	
Jacob <i>et al</i> (2004) Kerala, India	1312 subjects (927 Leukoplakia, 170 Oral submucous fibrosis, 100 Erythroplakia & 115 Oral Potentially malignant disorders) from a screening programme	47 773 subjects with no oral mucosal disorders from the same screening study	Leukoplakia,	Non chewer	1.00	Age, sex, education and BMI	Analysis in non-smokers and non-drinkers	
				Chewer (betel quid only)	22.2 (11.5,43.7)			
				Chewer (betel quid with tobacco)	72.2 (44.1, 118.1)			
				Erythroplakia,	Non chewer			1.00
					Chewer (betel quid only)			29.0 (5.63,149.5)
					Chewer (betel quid with tobacco)			63.7 (18.7, 217.2)
			Oral submucous fibrosis	Non chewer	1.00			
				Chewer (betel quid only)	56.2 (21.8-144.8)			
				Chewer (betel quid with tobacco)	73.0 (32.9, 162.2)			
				Oral Potentially malignant disorders	Non chewer			1.00
					Chewer (betel quid only)			28.3 (6.88,116.7)
					Chewer (betel quid with tobacco)			71.0 (24.8,202.8)
Yang <i>et al</i> (2005b) China, Taiwan 1997-2005	102 subjects with Oral precancer in a screening programme (Mutan community)		Oral Potentially malignant disorders	Non-chewer	1.00	Non smoker		
				Chewer (betel quid only)	3.95 (1.23-12.68)			
				<i>Quids/day</i>				
				30+	6.31 (1.49-26.72)			
				10-29	3.77 (1.15-12.37)			
				1-9	2.12 (0.44-10.34)			
			Oral submucous fibrosis	Non-chewer	1.00	Non smoker		
				Chewer (betel quid only)	4.51 (1.20-16.94)			
				<i>Quids/day</i>				
				30+	10.34 (2.39-44.73)			
				10-29	4.55 (1.16-17.84)			
				1-9	3.66 (0.71-18.91)			

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Chung <i>et al</i> (2005) China, Taiwan	Cross sectional study in 1075 subjects in a population study (136 precancers)		Oral Potentially malignant disorders	Non-chewer Chewer (betel quid only)	1.00 8.40 (5.13,13.75)		Synergy with smoking and alcohol for leukoplakia (OR 15.12 (95%CI 6.34, 36.05))
Ariyawardana <i>et al</i> (2006) Sri Lanka	74 (61 men, 13 women) One Hospital	74 (61 men, 13 women) One Hospital , with other disorders	Oral submucous fibrosis	Non-chewer Chewer (betel quid with or without tobacco)	1.00 171.83 (36.35-812.25)	Tobacco smoking & alcohol consumption	No interaction with smoking and alcohol use.
Chen <i>et al</i> (2006) Taiwan, China	Cross sectional study in 113 hospital patients with pathology diagnoses of 40 cases of leukoplakia and 23 cases of submucous fibrosis	23 controls and 27 cases of non-premalignant disorders	Oral leukoplakia Oral submucous fibrosis	Non-chewer Chewer (betel quid only) Non-chewer Chewer (betel quid only)	1.00 22.8 (3.55-145.80) 1.00 4.2 (0.17-0.54)	Age, tobacco smoking and HPV	
Ariyawardana <i>et al</i> (2007) Sri Lanka	Cross sectional study in subjects with precancere detected in a screening program		Oral Potentially malignant disorders	Non-chewer Chewer (betel quid with and without tobacco)	1.00 3.01 (2.25-4.0)	Tobacco smoking & alcohol consumption	

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Ahmad <i>et al.</i> (2006) Patna, India	157 Oral submucous fibrosis cases from hospital	135 hospital-based controls with other diseases	Oral submucous fibrosis	Areca nut only	[172.8 (15.87-7723.27)]			
				Paan masala	[138.2 (32.97-629.34)]			
				Paan	[41.5 (12.33-156.59)]			
				Gutka	[234.9 (67.17-900.33)]			
Yen <i>et al.</i> (2008a) China, Taiwan	8360 men participating in a screening program 491 leukoplakia, 124 erythroleukoplakia, 441 oral submucous fibrosis, 104 with other precancers.		Leukoplakia	Occasional use	1	Age, Education, occupation, smoking & alcohol drinking	Significant interaction with smoking but not with alcohol use.	
				<i>Quids</i> (BQ-T)/day	x			
				1-10	2.14 (1.62-2.81)			
			11-20	2.99 (2.06-4.27)				
			20+	5.37 (3.76-7.47)				
			Erythroleukoplakia	Occasional use	1			Age, Education, occupation, smoking & alcohol drinking
				<i>Quids</i> (BQ-T)/day	x			
				1-10	3.69 (1.55-8.79)			
			11-20	13.78 (5.76-32.98)				
20+	36.64 (15.94-84.16)							
Oral submucous fibrosis	Occasional use		Age, Education, occupation, smoking & alcohol drinking					
	<i>Quids</i> (BQ-T)/day							
	1-10	1.26 (0.91-1.74)						
11-20	3.88(2.75-5.60)							
20+	6.89(4.96-9.58)							
Thomas <i>et al.</i> (2008) Papua New guinea	197 cases detected with oral leukoplakia from a cross sectional study population of 1678 adults	1282 controls with no lesions from the same population		oral leukoplakia	Non chewer	1	Adjusted for age, sex, census and smoking (non chewers includes newer chewers & ex chewers)	Synergy with smoking ; joint exposure OR of 24.3 (8.7-67.4)
					chewer	3.8 (1.7-8.4)		
					<i>Quids</i> (BQ-T)/day			
					<2	4.3 (1.9-9.1)		
			3-8		4.0 (1.8-9.3)			
>9	4.1 (1.8-9.3)							