

Table 2.4 Meta-analysis of smokeless tobacco use and oral and pharyngeal cancer,

Type of ST (region) ^a	Adjustments/restrictions ^b	Number of estimates (RR/OR ids)	Random-effects RR/OR (95% CI)	Heterogeneity		
				χ^2	I2	<i>P</i> (χ^2)
Any	Overall	41	1.79 (1.36–2.36)	335.6	88.1	< 0.001
	Smoking-Adjusted	19	1.36 (1.04–1.77)	69.5	74.1	< 0.001
	Smoking- and alcohol-adjusted	10	1.07 (0.84–1.37)	12.5	28.0	0.186
	Never smokers	9	1.72 (1.01–2.94)	15.9	49.7	0.044
	Never smokers – alcohol-adjusted	3	1.87 (0.82–4.27)	0.6	0.0	0.731
Any (USA)	Overall	31	2.16 (1.55–3.02)	275.8	89.1	< 0.001
	Smoking-Adjusted	12	1.65 (1.22–2.25)	33.6	67.3	< 0.001
	Smoking- and alcohol- adjusted	6	1.04 (0.80–1.35)	1.8	0.0	0.875
	Never smokers	5	3.33 (1.76–6.32)	3.5	0.0	0.476
	Never smokers – alcohol-adjusted	2	1.58 (0.52–4.81)	0.4	0.0	0.512
Snuff (Scandinavia)	Overall	7	0.97 (0.68–1.37)	14.5	58.8	0.024
	Smoking-Adjusted	7	0.97 (0.68–1.37)	14.5	58.8	0.024
	Smoking- and alcohol-adjusted	4	1.10 (0.64–1.90)	10.7	71.9	0.014
	Never smokers	4	1.01 (0.71–1.45)	2.2	0.0	0.524
	Never smokers – alcohol-adjusted	1	2.30 (0.67–7.92)	–	–	–
Published since 1990	Overall	18	1.28 (0.94–1.76)	81.7	79.2	< 0.001
	Smoking-Adjusted	14	1.00 (0.83–1.20)	18.5	29.8	0.139
	Smoking- and alcohol- adjusted	10	1.07 (0.84–1.37)	12.5	28.0	0.186
	Never smokers	7	1.24 (0.80–1.90)	7.5	20.1	0.277
	Never smokers – alcohol-adjusted	3	1.87 (0.82–4.27)	0.6	0.0	0.731

^a For each study/sex, the RR/OR smokeless tobacco was included if available, otherwise that for chewing tobacco or snuff was used.

^b Smoking-adjusted includes estimates for smokers and non-smokers combined, adjusted for smoking if available, and estimates for never smokers otherwise.

CI, confidence interval; OR, odds ratio; RR, relative risk; ST, smokeless tobacco
Lee and Hamling, (2009)