

Table 2.6. Pooled- and meta-analyses of consumption of alcoholic beverages and cancers of the upper aerodigestive tract

Reference, study location, period	Organ site (ICD code)	Characteristics of study population	Exposure assessment	Exposure categories	Cases/Controls	Relative risk/Odds ratio	(95% CI)	Adjustment factors	Comments					
Lubin <i>et al.</i> (2009) The International Head and Neck Cancer Epidemiology Consortium (INHANCE)	Head and Neck cancer (oral cavity, oropharynx, hypopharynx, oral cavity or pharynx not otherwise specified, larynx, and HNC unspecified)	Mostly hospital-based case-control studies, all included controls frequency matched to cases on age, sex, and additional factors, Never drinkers (1 124 cases, 3 487 controls), beer drinkers only (858 cases, 986 controls), liquor drinkers only (499 cases, 527 controls), wine drinkers only (1 021 cases, 2 460 controls), and drinkers of multiple beverage types (5 605 cases, 6 759 controls)	Face to face interview in all studies except for Iowa study which used self-administered questionnaire, standardized estimates of beverage consumption frequency	<i>No. of ethanol standardized drinks per week</i>				Age, sex, race/ethnicity, study centre, educational level, pack-years of smoking, years of cigar smoking, and years of pipe smoking	Results on years of consumption showed similar results					
										Beer	Never	1124/3,487	1.0	
											≤ 5	215/414	1.6	1.3–2.1
											6–15	228/304	1.9	1.4–2.7
											16–30	136/146	2.2	1.3–3.5
											> 30	279/122	5.4	3.1–9.2
											P trend		< 0.0001	
											P heterogeneity		0.002	
										Wine	Never	1124/3,487	1.0	
											≤ 5	128/477	1.1	0.8–1.6
											6–15	157/722	1.2	0.8–1.9
											16–30	209/733	1.9	0.9–3.9
											> 30	527/527	6.3	2.2–18.6
											P trend		< 0.0001	
											P heterogeneity		< 0.0001	
Liquor	Never	1124/3,487	1.00											
	≤ 5	161/276	1.6	1.0–2.6										
	6–15	116/ 121	1.5	1.0–2.4										
	16–30	97/ 70	2.3	1.4–4.0										
	> 30	125/60	3.6	2.2–5.8										
	P trend		< 0.0001											
	P heterogeneity		0.02											

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Lubin <i>et al.</i> 2009 (contd)				Cumulative consumption, drink-years*					Drink-year: one standard drink (15.6 ml ethanol) for one year
				Beer					
				Never	1124/ 3 487	1.00			
				≤ 10	177/335	1.8	1.4–2.3		
				11–20	77/145	1.6	1.1–2.4		
				21–40	115/168	2.1	1.5–3.0		
				41–80	132/152	1.9	1.3–2.7		
				> 80	348/178	4.0	2.5–6.6		
				P trend		0.005			
				P heterogeneity		0.0006			
				Wine					
				Never	1124/3,487	1.0			
				≤ 10	75/367	1.0	0.7–1.4		
				11–20	50/ 162	1.6	1.0–2.8		
				21–40	65/313	1.1	0.7–1.8		
				41–80	118/ 529	1.4	0.7–2.9		
				> 80	707/ 1078	4.0	1.8–9.0		
				P trend		< 0.0001			
				P heterogeneity		< 0.0001			
				Liquor					
				Never	1124/3,487	1.0			
				≤ 10	103/219	1.3	0.8–1.9		
				11–20	62/94	1.5	0.8–2.6		
				21–40	73/75	1.7	1.0–2.8		
				41–80	88/51	3.6	1.9–6.9		
				> 80	170/86	2.9	1.8–4.7		
				P trend		0.21			
				P heterogeneity		0.03			

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Hashibe <i>et al.</i> (2007), Hashibe <i>et al.</i> (2009) The International Head and Neck Cancer Epidemiology Consortium (INHANCE)	Head and neck, Oral cavity, pharynx	Pooled analysis of 15 hospital based case-controls studies with 10 244 cases of head and neck cancers and 15 227 controls, of which 1 072 cases and 5 775 controls were never-smokers (Hashibe <i>et al.</i> (2007). In an another analysis (Hashibe <i>et al.</i> (2009), for all head and neck cancers combined overall results (ever versus never alcohol use) among never-smokers (831 cases, 1587 controls) were presented. Results from Hashibe <i>et al.</i> (2009) are indicated by ‘*’	Face to face interview in all studies except for Iowa study which used self-administered questionnaires, standardised estimates of beverage consumption frequency	All head and neck cancers					Age, sex, education level, race/ethnicity, study centre	Drink-year: one standard drink (15.6 ml ethanol) for one year Results for smokers are also presented in Hashibe <i>et al.</i> (2009), but all the results from this consortium presented in this table are for never-smokers.
				<i>Frequency</i>						
				Never	541/2482	1.00				
				< 1 drinks/day	164/899	1.04	0.79–1.38			
				1–2 drinks/day	202/1324	1.30	0.94–1.80			
				3–4 drinks/day	59/536	1.82	1.10–2.99			
				5+ drinks/day	65/389	2.81	1.49–5.27			
				p-trend		0.001				
				<i>Cumulative use</i>						
				Never drinkers	541/2482	1.00				
				1–10 drink-years	147/747	1.07	0.82–1.39			
				11–20 drink-years	64/339	1.31	0.86–1.98			
				21–30 drink-years	42/260	1.33	0.73–2.42			
				31–40 drink-years	33/219	1.31	0.86–2.01			
				41–50 drink-years	23/190	1.15	0.70–1.90			
> 50 drink-years	179/1391	1.87	1.27–2.75							
p-trend		0.003								
<i>Ever drinking</i> ^a										
All	523/3290	1.18	0.93–1.50							
Women *	389/608	0.93	0.73–1.19							
Men *	442/979	1.07	0.80–1.44							

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Hashibe <i>et al.</i> (2007), Hashibe <i>et al.</i> (2009) (contd)				Oral cavity					* reference group = never alcohol use
				<i>Frequency</i>					
				Never	243/2482	1.00			
				< 1 drinks/day	44/899	1.14	0.8–1.63		
				1–2 drinks/day	60/1324	1.64	1.19–2.25		
				3–4 drinks/day	10/536	1.11	0.57–2.15		
				5+ drinks/day	8/389	1.23	0.59–2.57		
				p-trend		0.032			
				<i>Cumulative use</i>					
				Never drinkers	243/2482	1.00			
				1–10 drink-years	21/211	2.36	1.43–3.88		
				11–20 drink-years	17/447	1.09	0.65–1.85		
				21–30 drink-years	19/774	0.81	0.49–1.33		
				31–40 drink-years	35/919	1.29	0.88–1.9		
				> 40 drink-years	32/813	1.15	0.77–1.73		
			p-trend		< 0.001				
			Never drinking	243/2482	1.00				
			Ever drinking	137/3290	1.17	0.92–1.48			

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Hashibe <i>et al.</i> (2007, 2009) (contd)				Larynx					
				<i>Frequency</i>					
				Never	40/1788	1.00			
				< 1 drinks/day	15/724	0.92	0.5–1.69		
				1–2 drinks/day	28/1115	1.26	0.77–2.07		
				3–4 drinks/day	11/480	1.24	0.62–2.45		
				5+ drinks/day	22/349	2.98	1.72–5.17		
				p-trend		< 0.001			
				<i>Cumulative use</i>					
				Never drinkers	40/1788	1.00			
				1–10 drink-years	7/185	2.61	1.14–5.98		
				11–20 drink-years	9/375	1.63	0.78–3.43		
				21–30 drink-years	18/673	1.40	0.79–2.48		
				31–40 drink-years	21/797	1.10	0.64–1.89		
				> 40 drink-years	21/677	1.00	0.58–1.73		
			p-trend		< 0.001				
			Never drinking	40/1788	1.00				
			Ever drinking	79/2812	1.21	0.82–1.79			

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Hashibe <i>et al.</i> (2007, 2009) (contd)				Oropharynx/Hypopharynx					
				<i>Frequency</i>					
				Never	153/2482	1.00			
				< 1 drinks/day	73/899	1.39	0.99–1.96		
				1–2 drinks/day	83/1324	1.66	1.18–2.34		
				3–4 drinks/day	24/536	2.33	1.37–3.98		
				5+ drinks/day	29/389	5.50	2.26–13.36		
				p-trend		< 0.001			
				<i>Cumulative use</i>					
				Never drinkers	153/2482	1.00	0.99–3.14		
				1–10 drink-year	18/211	1.76	0.81–2.11		
				11–20 drink-year	28/447	1.34	1.37–2.77		
				21–30 drink-year	63/774	1.95	0.78–2.66		
				31–40 drink-year	61/919	1.44	0.68–3.37		
				> 40 drink-year	37/813	1.51			
p-trend		0.003							
Never drinking	153/2482	1.00	0.99–1.94						
Ever drinking	216/3290	1.38							

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Hashibe <i>et al.</i> (2007, 2009) (contd)				Oral cavity /Pharynx NOS^b					
				<i>Frequency</i>					
				Never	80/1982	1.00			
				< 1 drinks/day	25/834	1.08	0.67–1.75		
				1–2 drinks/day	26/1171	1.24	0.77–1.99		
				3–4 drinks/day	13/495	2.32	1.24–4.34		
				5+ drinks/day	4/382	0.77	0.27–2.18		
				p-trend		0.891			
				<i>Cumulative use</i>					
				Never drinkers	80/1982	1.00			
				1–10 drink-year	13/181	2.59	1.38–4.86		
				11–20 drink-year	11/394	1.09	0.56–2.11		
				21–30 drink-year	18/697	1.26	0.73–2.17		
				31–40 drink-year	14/853	0.86	0.47–1.57		
				> 40 drink-year	13/773	0.92	0.49–1.71		
			p-trend		0.014				
			Never drinking	80/1982	1.00				
			Ever drinking	72/2998	1.09	0.77–1.54			

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Rehm <i>et al.</i> (2007)	Head and neck cancer	A meta-analysis in which 13 case-control studies with 3 254 cases were included		<i>Years since drinking cessation</i>				Smoking status and, where available, socio-demographic factors		
				Head and neck						
	Oesophageal cancer			Oesophagus						
				Current drinkers	1.00					1.31–1.56
				> 0–2 yrs	1.43					1.22–1.46
				2–10 yrs	1.34					0.76–0.91
				10–16 yrs	0.83					0.39–0.72
				16+ yrs	0.53					0.45–0.51
				Never drinker	0.48					
				Current drinkers	1.00					2.23–2.80
				> 0–2 yrs	2.50					1.03–1.18
				2–5 yrs	1.10					0.79–0.92
				5–10 yrs	0.85					0.79–0.92
	10–15 yrs	0.85	0.31–0.39							
	15+ yrs	0.35	0.35–0.39							
	Never drinker	0.37								

^a Reference group = never alcohol use

^b Not otherwise specified