

Table 2.16. Case-control studies of consumption of alcoholic beverages and cancer of the colorectum

Reference, study location, period	ICD (subsite)	Characteristics of cases	Characteristics of controls	Exposure assessment	Exposure categories	Relative risk (95% CI)	Adjustment factors	Comments
Wang <i>et al.</i> , (2006), India, 1999–2001	CRC Colon Rectum	302 (59 colon, 243 rectal) identified through Cancer Institute; aged 17–88 years; response rate not stated	291 hospital-based (relative/visitors to patients of non gastrointestinal tract cancers) at same Institute; matched by age, sex; response rate not stated	Interview-administered questionnaire	<i>Total alcohol intake</i> Never Drinkers Never Drinkers	<i>Colon</i> 1.0 1.13 (0.5–2.38) <i>Rectum</i> 1.0 1.08 (0.66–1.79)	Age, sex, household income, education, religion, language, smoking, chewing, vegetarianism	Drinkers defined as those who drank ≥ once/month for > 1 year; no differences by non-Indian and Indian alcohol; no association with duration of drinking or cumulative intake, although low numbers of drinkers (11 colon cases, 45 rectal cases)
Murtaugh <i>et al.</i> (2007), USA (Kaiser Permanente Medical Care Program of Northern California, and Utah); 1997–2001 (also presented in Murtaugh <i>et al.</i> (2004))	Rectal only	742 identified through rapid reporting system in Kaiser Permanente and through cancer registry; excluded familial adenomatous polyposis; ulcerative colitis, and Chron's disease; aged 30–79 years; response rate 65%	970 population-based (through mailing lists in Kaiser Permanente, and in Utah through driver license records [< 65 years] and social security lists [≥ 65 years]); matched by age, sex; response rate 65%	Interview-administered questionnaire	<i>Current alcohol intake (1–2 years ago; g/d)</i> ≤ 0.09 0.10–4.74 ≥ 4.75 p for trend <i>Past alcohol intake (g/d)</i> None 0.01–19 ≥ 20 p for trend	 1.0 1.11 (0.89–1.38) 1.05 (0.84–1.31) 0.70 1.0 0.93 (0.76–1.15) 1.16 (0.90–1.48) 0.36	Age, sex, body mass index, physical activity, intake of energy, fibre, calcium, ibuprofen use, smoking	Low intake

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Sriamporn <i>et al.</i> (2007), Thailand, 2002–06	CRC	253 identified through regional hospitals (135 men, 118 women); 100% histologically confirmed; age range not stated (all ages); response rate not stated	253 hospital-based (non-malignant, non gastrointestinal disease); matched by age, sex, region; response rare not stated	Interview-administered questionnaire	<i>Ever drink alcohol</i> No Yes	1.0 1.7 (1.1–2.7)	Not clearly stated, but probably adjusted for family history, body mass index, physical activity, smoking	Ever-drinkers defined as consumers of alcoholic drinks at least once/month
Cao <i>et al.</i> (2008) and Gao <i>et al.</i> (2008) China, 2000–2002	CRC Colon Rectum (ICD codes not stated)	325 identified through cancer registries and local hospital (190 men, 125 women); all ages; 100% histologically confirmed; response rate 97%	449 (233 men, 216 women) population-based (primary care practice lists in same area); matched by age, sex, rate; response rate 93%	Interview-administered questionnaire	<i>Alcohol drinking</i> No Yes No Yes <i>Gao et al. (2008)</i> <i>Alcohol intake (g/month)</i> 0–29 30–299 300–599 ≥ 600 p for trend	<i>Colorectum (n = 315)</i> 1.0 1.90 (1.28–2.82) <i>Rectal (n = 210)</i> 1.0 2.09 (1.35–3.25) <i>Colon (n = 105)</i> 1.0 1.56 (0.89–2.74) <i>Colorectum: men only</i> 1.0 1.22 (0.58–2.58) 1.98 (0.96–4.09) 2.33 (1.47–3.71) 0.0001	Age, region, smoking, tea consumption and genotypes of two MTHFR genetic variants Age, smoking	Positive association only found in men (RR: 2.07 for yes versus no) and seen for colon and rectal cancer; no association in women

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Lightfoot <i>et al.</i> (2008), United Kingdom, 1997–2000	CRC	500 recruited through regional hospitals (300 men, 200 women); aged 45–80 years; response rate not stated	742 population-based (primary care practice lists); matched by age, sex; response rate not stated	Interview-administered questionnaire	<i>Alcohol intake at age 40 years (units/week)</i> 0 1–5 6–13 ≥ 14 Overall trend 0 1–5 6–13 ≥ 14 0 1–5 6–13 ≥ 14	<i>Colorectum</i> 1.0 1.09 (0.78–1.53) 1.60 (1.13–2.25) 2.57 (1.81–3.64) 1.36 (1.22–1.53) <i>Colon</i> 1.0 not stated 1.57 (1.04–2.35) 2.75 (1.58–4.79) <i>Rectum</i> 1.0 not stated 1.65 (1.02–2.68) 2.88 (1.79–4.63)	Age, sex	Similar increased risk seen in men and women
Pereira Serafim <i>et al.</i> (2008), Brazil, 2002–03	CRC	114 recruited through oncology dept. of the University (64 men, 50 women); excluded patients with polypous adenomatous polyposis, Crohn disease, ulcerative colitis; response rate not stated	114 (blood donors at same hospital as cases), matched by age, sex; response rate not stated	Interview-administered questionnaire	<i>Alcohol use</i> No Yes	1.0 0.46 (0.20–0.86)	none	

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Benedetti <i>et al.</i> (2009), Canada, 1980s	Colon Rectum	666 identified through regional hospitals (427 colon, 239 rectum); all men, aged 35–70 years old; all histologically confirmed; response rate ~82% (for all cancer sites combined)	507 population-based (randomly selected from electoral roll); stratified by age and area to all cancers combined; response rate 72%	Interview or self-administered questionnaire with case or proxy	<i>Frequency of drinking (weekly)</i> Never 1–6 ≥ 7 Never 1–6 ≥ 7 <i>Alcohol intake among regular drinkers (≥ 7 times per week; drink-years*)</i> Never weekly 0–71 72–179 ≥ 180 P for trend Never weekly 0–71 72–179 ≥ 180 P for trend	<i>Colon</i> 1.0 1.11 (0.77–1.60) 1.21 (0.85–1.71) <i>Rectum</i> 1.0 1.49 (0.95–2.34) 1.52 (0.98–2.35) <i>Colon</i> 1.0 0.92 (0.60–1.41) 1.20 (0.78–1.85) 1.81 (1.12–2.91) 0.008 <i>Rectum</i> 1.0 1.32 (0.79–2.21) 1.39 (0.81–2.38) 2.14 (1.21–3.81) 0.079	Age, smoking, respondent status, ethnicity, income, education, time since quitting drinking, fruit and vegetable intake	*Drink-years is a product of duration and average number of drinks/day; information from proxies derived from ~13% of cases; no significant association by beverage type

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Ganesh <i>et al.</i> (2009), India, 1989–92	CRC	203 (144 men, 59 women) identified through hospital outpatient clinics; aged 30–75 years; 100% histologically confirmed; response rate not stated	1628 hospital-based (excluded malignant, gastrointestinal, infectious disease and benign lesions); unmatched; response rate not stated	Interview-administered questionnaire (pre-diagnosis)	<i>Alcohol 1 year ago</i> No Yes No Yes No Yes	1.0 1.2 (0.7–2.2) <i>Men (144)</i> 1.0 1.2 (0.7–2.1) <i>Women (59)</i> 1.0 1.2 (0.7–2.1)	Age, area of residence, religion, vegetables, fish, meat, occupation, tobacco chewing, smoking	Alcohol intake usually local liquor from palm trees (ethanol content 40–60%); authors note there may have been some underreporting due to social stigma of alcohol drinking
Wei <i>et al.</i> (2009), China, 2002–08	CRC Colon Rectum	706 identified through regional hospitals (437 men, 269 women); histological confirmation not stated; age range not stated; excluded familial adenomatous polyposis and hereditary non-polyposis CRC; response rate ~95% for test group from several hospitals, and 85% for validation group in another hospital	723 population-based (randomly selected from 10 000 individuals from Guangzhou City; method not stated); matched by age, sex; response rate ~85%	Interview-administered questionnaire	<i>Drinking status</i> None Former Current p for trend None Former Current None Former Current	<i>Colorectum</i> 1.0 2.30 (1.27–4.17) 8.61 (6.15–12.05) < 0.0001 <i>Colon (348)</i> 1.0 2.51 (1.24–5.07) 7.60 (5.13–11.25) <i>Rectum (358)</i> 1.0 1.71 (0.80–3.65) 7.52 (5.13–11.01)	Age, sex, smoking, family history, body mass index	Current drinkers defined as those who drank alcohol at least once per week for a year. Former drinkers defined as those who stopped drinking for more than 1 year. Authors state the high OR may be due to selection bias (only 20% of the control group were current drinkers)

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Wu <i>et al.</i> (2009), Taiwan, China, recruitment period not stated	CRC	258 identified through regional hospitals (153 men, 105 women); 100% histologically confirmed; age range not stated; response rate not stated	533 hospital-based (routine health check-up at same hospital, and men with otolaryngeal disease in same hospital); matched by age, sex; response rate not stated	Interview-administered questionnaire	<i>Alcohol intake</i>		Age, education, ethnicity, consumption of fruit and vegetables	No significant difference by sex, although very few women were drinkers
					None	1.0		
					Drinkers	1.1 (0.7–1.8)		
					<i>Duration of intake (years)</i>			
					1–19	0.7 (0.3–1.7)		
					≥ 20	1.3 (0.8–2.2)		