

Table 2.77. Case-control studies on smoking and ovarian cancer

Reference Country and years of study	Exposure estimates	Relative risk (95%CI)	Comments
Newhouse <i>et al.</i> (1977) London	Smoking	Pathological type (%) Papillary cystadenocarcinoma : 38 Serous cystadenocarcinoma : 61 Endometrial carcinoma : 48 Mucous cystadenocarcinoma : 59 Other tumour : 52	
Tzonou <i>et al.</i> (1984) Greece 1980-1981	Less than half pack/day More than half pack/day	RR 1.1 0.8	Adjusted for age, parity, age at menopause and use of exogenous estrogens
Engeland <i>et al.</i> (1996b) Norway 1964-1965	Former Current	RR 0.6 (0.2-1.3) 1.0 (0.7-1.5)	
Marchbanks <i>et al.</i> (2000) USA 1980-1982	Ever smoker Current Former No. of year since stop 1-5 >5	Serous/Mucinous/Endometrioid/Other 0.9 (0.7-1.2): 2.3 (1.4-3.9): 1.0 (0.6-1.5): 0.7 (0.4-1.2) 1.0 (0.7-1.3): 2.9 (1.7-4.9): 0.9 (0.5-1.4): 0.6 (0.3-1.2) 0.8 (0.5-1.2): 1.0 (0.5-2.4): 1.2 (0.7-2.0): 0.7 (0.3-1.6) 1.0 (0.6-1.8): 1.7 (0.6-4.6): 1.1 (0.5-2.7): 0.9 (0.3-3.0) 0.7 (0.4-1.2): 0.6 (0.2-2.0): 1.2 (0.6-2.3): 0.6 (0.2-1.6)	Adjusted for parity and ever-use of oral contraceptives.
Kuper <i>et al.</i> (2000b) USA 1992-1997	Years of smoking 1-9 10-19 20-39 ≥40 Average cigarette/day 1-9 10-19 20-39 ≥40 Pack years of smoking 0-10 11-20 21-30 >30	1.13 (0.75-1.70) 0.89 (0.60-1.33) 1.45 (1.04-2.01) 0.91 (0.55-1.52) P for trend=0.27 1.17 (0.78-1.75) 1.11 (0.75-1.64) 1.19 (0.88-1.63) 1.07 (0.59-1.94) P for trend=0.34 1.01 (0.72-1.43) 0.98 (0.65-1.49) 1.56 (0.93-2.60) 1.22 (0.83-1.78) P for trend=0.17	Adjusted for age, center, marital status, parity, BMI, OC-use, family history of breast, ovarian or prostate cancer, tubal ligation, education, alcohol consumption and pack-years of smoking

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Modugno <i>et al.</i> (2002) (contd)	Pack-year <5 5-24 >24	1.0 (0.7-1.4); 1.0 (0.5-2.1) 1.0 (0.8-1.3); 1.9 (1.2-3.1) 1.2 (0.9-1.6); 2.7 (1.6-4.8)	Adjusted for ever use of oral contraceptives, number of live births, age, ever had tubal ligation, and family history of ovarian cancer.
Zhang <i>et al.</i> (2004) USA 1996-1997	Smoking status Ex smoker Current Number of cigarettes smoked per day 1-19 20 >20	Serous/Mucinous/Endometrioid/Other 0.9 (0.6-1.3); 2.5 (1.1-5.4); 1.0 (0.5-2.1); 0.8 (0.4-1.4) 0.8 (0.5-1.1); 1.4 (0.7-2.9); 0.9 (0.5-1.7); 1.1 (0.6-2.0) Serous/Mucinous/Endometrioid/Other 0.8 (0.5-1.2); 1.5 (0.7-3.4); 1.0 (0.5-1.9); 1.3 (0.7-2.4) 0.9 (0.6-1.3); 1.4 (0.6-2.3); 0.7 (0.3-1.7); 0.9 (0.4-1.7) 0.8 (0.5-1.2); 2.9 (1.2-7.5); 1.3 (0.6-2.9); 0.7 (0.3-1.5)	Adjusted for race, education, body mass index, height, age at menarche, menopausal status, parity, oral contraceptive use, and post-menopausal hormone use.
Pan <i>et al.</i> (2004) Canada 1994-1997	Smoking status Ever smoke Smoking pack-years 1-10 11-20 21-30 >30 P for trend Smoking years 1-20 21-30 31-40 >40 P for trend Average number of cigarettes/day 1-10 11-20 >20 P for trend	Ex smokers/Current smoker 1.30 (1.01-1.67); 1.10 (0.81-1.49) 1.14 (0.83-1.58) : 0.93 (0.49-1.76) 1.90 (1.23-2.93); 1.48 (0.91-2.41) 1.36 (0.76-2.43); 0.64 (0.31-1.29) 1.17 (0.67-2.04); 1.20 (0.77-1.87) <i>p</i> =0.061; <i>p</i> =0.68 1.35 (1.01-1.81); 0.91 (0.53-1.56) 1.47 (0.94-2.31); 1.01 (0.61-1.67) 0.97 (0.51-1.84); 1.10 (0.65-1.85) 1.36 (0.56-3.28); 1.32 (0.75-2.33) <i>p</i> =0.13; <i>p</i> =0.49 1.31 (0.95-1.79); 0.90 (0.55-1.47) 1.14 (0.77-1.67); 1.22 (0.83-1.78) 1.76 (1.05-2.93); 0.93 (0.54-1.55) <i>p</i> =0.35; <i>p</i> =0.74	Adjusted for 10-year age group, province of residence, parity, menopause status, years of menstruation, education, BMI, physical activity total energy intake, and alcohol consumption
Riman <i>et al.</i> (2004) Sweden 1993-1995	Smoking cigarettes/day Former 1-10 ≥11 P value	Serous/Mucinous/Endometrioid/ Clear all 0.72 (0.52-0.98); 0.98 (0.50-1.91); 1.06 (0.72-1.57); 0.49 (0.19-1.29) 0.72 (0.49-1.06); 0.98 (0.40-2.41); 0.67 (0.37-1.19); 0.68 (0.23-2.02) 0.53 (0.33-0.88); 1.18 (0.50-2.79); 1.12 (0.66-1.90); 0.38 (0.08-1.67) <i>p</i> =0.01; <i>p</i> =0.98; <i>p</i> =0.43; <i>p</i> =0.27	Adjusted for age, parity, body mass index, and age at menopause, duration of contraceptive use, and ever use of hormone replacement therapy
Kurian <i>et al.</i> (2005) USA 1973-2001	Former Current	Serous/Mucinous/Endometrioid/Clear All 0.96 (0.75-1.2); 1.0 (0.59-1.8); 0.88 (0.60-1.3); 0.62 (0.36-1.1) 1.0 (0.77-1.3); 2.4 (1.5-3.8); 0.73 (0.48-1.1); 0.60 (0.34-1.1)	Adjusted for parity and contraceptive use

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Baker <i>et al.</i> (2006) USA 1982-1998	<p>Smoking status</p> <p>Never smoked, daily ETS exposure</p> <p>Former smoker</p> <p>Current smoker</p> <p>Cigarettes/day</p> <p><20</p> <p>20-29</p> <p>≥30</p> <p>Years of smoking</p> <p><20</p> <p>20-29</p> <p>≥30</p> <p>Pack-years</p> <p><20</p> <p>20-29</p> <p>≥30</p> <p>Usual daily ETS exposure(h) among never-smokers</p> <p><2</p> <p>2-8</p> <p>>8</p> <p>Usually daily ETS exposure (h)</p> <p><2</p> <p>2-8</p> <p>>8</p> <p>Never smoked, daily ETS exposure</p>	<p>OR</p> <p>0.53 (0.39–0.73)</p> <p>0.76 (0.56–1.04)</p> <p>0.44 (0.30–0.65)</p> <p>0.65 (0.44–0.95)</p> <p>0.64 (0.45–0.91)</p> <p>0.58 (0.38–0.88)</p> <p>0.71 (0.47–1.06)</p> <p>0.65 (0.46–0.93)</p> <p>0.56 (0.38–0.82)</p> <p>0.71 (0.46–1.08)</p> <p>0.61 (0.42–0.88)</p> <p>0.60 (0.41–0.88)</p> <p>0.58 (0.38–0.89)</p> <p>0.50 (0.34–0.75)</p> <p>0.51 (0.31–0.85)</p> <p>0.55 (0.39–0.77)</p> <p>0.64 (0.48–0.86)</p> <p>0.46 (0.33–0.65)</p> <p>All : 0.68 (0.47–0.99)</p> <p>Serous: 0.60 (0.38v0.94)</p> <p>Mucinous: 0.71 (0.22–2.32)</p> <p>Endometrioid: 1.02 (0.44–2.39)</p> <p>Clear all: 0.50 (0.16–1.59)</p> <p>Borderline: 0.92 (0.29–2.96)</p>	<p>Adjusted for age, residence in western New York, income, usual body mass index, history of vaginal infection, year of study participation, lifetime duration of breastfeeding, usual daily exposure to second hand-hand ETS, and multiplicative interaction between income and second-hand smoke exposure.</p>
	<p>Former smoker</p>	<p>All: 0.77 (0.53–1.10)</p> <p>Serous: 0.75 (0.49–1.15)</p> <p>Mucinous: 1.00 (0.34–2.91)</p> <p>Endometrioid: 0.93 (0.40–2.14)</p> <p>Clear all: 0.55 (0.19–1.61)</p> <p>Borderline: 0.62 (0.19–2.06)</p>	

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Baker <i>et al.</i> (2006) (contd)	Current smoker	All: 0.55 (0.34–0.90) Serous: 0.52 (0.29–0.95) Mucinous: 0.79 (0.19–3.25) Endometrioid: 0.73 (0.23–2.38) Clear all: 0.28 (0.05–1.65) Borderline: 0.78 (0.18–3.40)	Adjusted for age, residence in western New York, income, usual body mass index, history of vaginal infection, year of study participation, lifetime duration of breastfeeding, usual daily exposure to second hand-hand ETS, and multiplicative interaction between income and second-hand smoke exposure.
Huusom <i>et al.</i> (2006) Denmark 1995-1999	Smoking status Former Current Duration of smoking (years) ≤10 11-20 21-30 31-40 ≥41	Serous/Mucinous 1.32 (0.79–2.18); 1.49 (0.79–2.81) 0.83 (0.50–1.37); 2.10 (1.22–3.60) 0.85 (0.32–2.23); 1.35 (0.49–3.68) 0.88 (0.38–2.05); 1.05 (0.40–2.71) 1.44 (0.79–2.64); 2.70 (1.44–5.08) 1.26 (0.71–2.25); 1.76 (0.87–3.55) 0.50 (0.21–1.19); 1.80 (0.80–4.07)	Adjusted for age, childbirth, number of additional births, age at first birth, breast feeding, duration of oral contraceptives, smoking, intake of milk.
Rossing <i>et al.</i> (2008) USA 2002-2005	Smoking status Ever Year since last smoked Current ≤1 year 2-5 6-15 16-25 >25 Age first smoked (years) <15 15-19 20+ Age last smoked (include current) ≤30 31-40 41-50 51+ Year Smoked ≤10 11-20 21-30 >30 P trend	Borderline /Invasive tumour 1.5 (1.1–2.1); 1.2 (1.0–1.4) 2.0 (1.3–3.0); 1.2 (0.9–1.6) 1.6 (0.7–3.7); 1.5 (0.9–2.6) 1.8 (1.1–2.9); 1.2 (0.9–1.7) 0.9 (0.5–1.6); 1.1 (0.8–1.5) 1.2 (0.7–2.3); 1.1 (0.8–1.6) 1.6 (1.0–2.5); 1.0 (0.7–1.5) 1.7 (1.2–2.4); 1.2 (1.0–1.6) 1.2 (0.7–2.0); 1.1 (0.8–1.5) 1.1 (0.6–1.8); 1.0 (0.7–1.4) 1.5 (0.9–2.5); 1.1 (0.8–1.6) 1.9 (1.2–2.9); 1.2 (0.9–1.7) 1.8 (1.1–3.0); 1.3 (1.0–1.7) 1.1 (0.7–1.8); 0.9 (0.7–1.3) 1.6 (1.0–2.5); 1.4 (1.0–2.0) 1.8 (1.2–2.8); 1.2 (0.9–1.7) 1.8 (1.1–3.0); 1.2 (0.9–1.6) $p=0.03$; $p=0.12$	Adjusted for age, calendar year of diagnosis/reference date, country of residence, number of full term births, duration of hormonal contraceptive and education

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Rossing <i>et al.</i> (2008) (contd)	Pack years smoked ≤80 81-310 311-630 631+ P trend	1.3 (0.8–1.2); 1.3 (0.9–1.7) 1.5 (0.9–2.4); 1.1 (0.8–1.5) 1.4 (0.9–2.2); 1.1 (0.8–1.6) 2.3 (1.4–3.8); 1.3 (0.9–1.7) <i>p</i> =0.003; <i>p</i> =0.19	Adjusted for age, calendar year of diagnosis/reference date, country of residence, number of full term births, duration of hormonal contraceptive and education
Fujita <i>et al.</i> (2008) Japan 1997-2003	Smoking Ever smoking Age at the start of smoking (years old) ≤19 20-24 ≥25 Number of cigarette/day ≤10 11-20 ≥21 P trend Passive smoking With smoker husband	OR 1.04 (0.62–1.72) 1.77 (0.57–5.55) 0.77 (0.33–1.81) 1.31 (0.67–2.59) 1.22 (0.63–2.37) 1.19 (0.58–2.42) 0.83 (0.32–2.16) <i>p</i> =0.92 0.92 (0.58–1.47)	Adjusted for age, year of survey, referral base (from screening, others), area of residence, history of alcohol drinking, family history of index cancer in parents and siblings, occupation (professional or clerical work, other work), age at menarche and number of children.
Lurie <i>et al.</i> (2008) Hawaii, USA 1993-2006	Past or current Smoker (rs854560) - TA - TT P trend rs662 - AG - AA P trend rs854560-rs662 - AA Any A - Any T-Any A P trend	0.92 (0.66–1.30) 0.36 (0.18–0.69) 0.16 (0.03–0.84) <i>p</i> =0.007 0.69 (0.37–1.30) 0.56 (0.26–1.19) <i>p</i> =0.14 0.86 (0.45–1.66) 0.30 (0.14–0.66) <i>p</i> = 0.56	Adjusted for age, ethnicity, parity, tubal ligation, menopausal status, use of contraceptive and menopausal hormones, and tobacco smoking

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Nagle et al. (2008) Australia	Smoking status	Endometrioid/Clear cell	Adjusted for age, education, parity, hormone contraceptive use, and BMI last year
	Ex-smoker	1.2 (0.8–1.8); 0.4 (0.2–0.7)	
	Current	0.9 (0.5–1.8); 1.1 (0.6–2.3) <i>p</i> =0.78; <i>p</i> =0.32	
	Total pack-years of smoking		
	1-14.9	1.2 (0.8–1.8); 0.7 (0.4–1.2)	
15-29.9	1.0 (0.5–2.0); 0.6 (0.2–1.6)		
≥30	1.1 (0.6–2.3); 0.3 (0.1–1.1)		
		<i>p</i> for trend 0.71; 0.03	