

Table 2.10. Case-control studies of combined estrogen-progestogen oral contraceptives and malignant melanoma

Reference, location	No. of cases	Age (years)	No. of controls	Exposure	No. of cases/No. of controls	Odds ratios (95% CI)	Adjustment/comments
Beral et al. (1977), USA	37 from hospital-based cancer register	20–59	74	Never used Ever used No information	22/33 13/36 2/5	1.0 1.8 [0.7–4.6] –	Walnut Creek Contraceptive Drug Study; review of medical records
Adam et al. (1981), United Kingdom	169	15–49	342	Never used Ever used <i>Current or past use</i> 1 month–4 years ≥ 5 years No information	66/214 44/126 22/72 17/35 5/19	1.0 [1.1 (0.7–1.8)] [1.0 (0.6–1.8)] 1.6 (0.8–3.1)	Unadjusted; cases were moderately more sensitive to sun and more likely to engage in outdoor tanning activities; 8% of cases and 3% of controls had ever used sunlamps ($P < 0.05$); postal questionnaire
Holly et al. (1983), Seattle, USA	87	35–74	863	Never used <i>Current or past use</i> 1–4 years 5–9 years ≥ 10 years <i>For SSM only, use for</i> ≥ 5 years, and Current use 1–4 years since last use ≥ 5 years since last use	38/621 6/118 9/78 9/47 NR NR NR	1.0 [0.8 (0.3–2.2)] [1.9 (0.8–4.2)] [3.1 (1.3–7.3)] 0.9 (0.1–9.7) 2.5 (0.8–7.0) 5.1 (2.0–12.8)	Age; no data on exposure to sun
Lew et al. (1983), Massachusetts State, USA	111	23–81	107	–	–	–	No data reported but authors stated that there was no difference in combined oral contraceptive use between cases and controls.

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Beral et al. (1984), Sydney, Australia	287	15–24	574	Never used <i>Current or past use</i> 1–4 years 5–9 years ≥ 10 years	79/159 124/274 56/103 28/36	1.0 [0.9 (0.6–1.3)] [1.1 (0.7–1.7)] [1.6 (0.9–2.9)]	No adjustment made, but authors stated that education, phenotype, history of sunburn and exposure to sun did not alter results; no difference by body location, thickness or histological type of melanoma
Helmrich et al. (1984), Canada and USA	160	20–59	640	Never used Ever used Use during year before study Use for 5 years before study <i>Current or past use</i> < 1 year 1–4 years 5–9 years ≥ 10 years Unknown Use for ≥ 5 years, starting 10 years before study	97/370 63/270 8/52 4/18 15/82 23/106 11/49 5/21 9/12 12/46	1.0 0.9 (0.6–1.3) 0.5 (0.2–1.3) 0.9 (0.3–2.9) 0.7 (0.4–1.3) 0.8 (0.5–1.4) 0.8 (0.4–1.7) 1.0 (0.4–2.9) 1.0 (0.5–2.1)	Adjusted for age, area, religion, education, hormone-related variables
Holman et al. (1984), Western Australia	276	18–79	276	Never used Ever used <i>Current or past use</i> < 2 years 2–4 years ≥ 5 years	NR NR NR NR NR	1.0 1.0 (0.6–1.6) 0.8 (0.3–2.0) 2.2 (0.7–6.8) 1.6 (0.5–4.9)	Adjusted for sensitivity to sun, migration status, sun exposure; no difference in risk estimates for the different histological types; no association with time since last use; home interviews

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Gallagher et al. (1985), Canada	361	20–79	361	Never used	NR	1.0	Adjusted for age, education, phenotype, freckling; no difference in risk estimates for the different histological types; home interviews
				<i>Current or past use</i>			
				< 1 year			
				1–4 years	NR	1.0 (NR)	
				≥ 5 years	NR	0.9 (NR)	
					NR	0.8 (NR)	
						Trend NS	
Green & Bain (1985), Queensland, Australia	91	15–81	91	Never used	48/42	1.0	Adjustment for phenotypic characteristics, solar exposure did not change results; no trend with time since last use and age at last use
				Ever used	43/49	0.7 (0.4–1.5)	
				<i>Current and past use</i>			
				1 month–4 years	31/30	[0.9 (0.5–1.8)]	
				> 4 years	12/19	0.4 (0.2–1.1)	
Østerlind et al. (1988), Denmark	280	20–79	536	Never used	167/299	1.0	Adjusted for age, sensitivity to sun, sunbathing; no difference according to type and potency of combined oral contraceptives
				Ever used	111/237	0.8 (0.5–1.2)	
				<i>Current or past use</i>			
				< 2 years	24/58	0.8 (0.4–1.4)	
				2–4 years	30/68	0.8 (0.4–1.3)	
				5–9 years	27/59	0.8 (0.4–1.4)	
				≥ 10 years	30/52	1.0 (0.6–1.7)	
Zanetti et al. (1990), Province of Turin, Italy	186	19–92	205	Never used	83/88	1.0	Analysed only in women aged 60 or younger; adjusted for age, education, phenotype, sunbathing; risk did not change according to type or location of melanoma, age or potency of combined oral contraceptive; hospital and home interviews.
				Ever used	NR	1.0 (0.5–1.9)	
				<i>Current or past use</i>			
				< 3 years	14/18	0.9 (0.4–1.8)	
				≥ 3 years	13/17	0.9 (0.3–2.0)	

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Lê et al. (1992), France	91	18–44	149	Never used <i>Current or past use</i> 1–9 years ≥ 10 years	24/38 54/97 13/14	1.0 1.1 (0.6–2.0) 2.1 (0.7–5.9)	Adjusted for sensitivity, exposure to sun for a subgroup of cases and controls with no substantial changes in risk estimates for duration of use; no association with time since first use, age at first use or combined duration of use and time since first use
Palmer et al. (1992), New York and Philadelphia, USA	615	18–64	2107	Never used <i>Current or past use</i> < 3 years ≥ 3 years Unknown <i>Severe cases with</i> 5–9 years of use ≥ 10 years of use <i>Non-severe cases with</i> 5–9 years of use ≥ 10 years of use	313/800 201/447 73/193 23/57 12/80 29/187 11/79 6/80	1.0 [1.2 (0.9–1.4)] [1.0 (0.7–1.3)] 1.0 (0.5–2.0) 1.1 (0.6–2.1) 1.5 (0.8–2.6) 2.0 (0.9–4.3)	Adjusted for age, education, body mass index, menopause, phenotype; elevated risk among non-severe cases of melanoma was attributed to surveillance bias; similar relative risk for different types
Zaridze et al. (1992), Moscow, Russian Federation	54	NR	54	Never used Ever used	53/47 1/7	1.0 0.04 (0.00–0.5)	Adjusted for phenotype, naevi and sunbathing

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Holly et al. (1995), San Francisco, USA	452	25–59	930	CMM Never used Ever used <i>Current or past use</i> < 5 years 5–9 years ≥ 10 years SMM Ever used <i>Current or past use</i> < 5 years 5–9 years ≥ 10 years	NR NR NR NR NR NR NR NR NR NR NR	1.0 0.7 (0.5–1.0) 0.6 (0.4–0.9) 0.9 (0.6–1.4) 1.0 (0.6–1.6) 0.7 (0.5–0.9) 0.6 (0.4–0.8) 0.8 (0.6–1.1) 0.8 (0.5–1.3)	Adjusted for age; authors stated that risk estimates were unaltered by education, phenotype or exposure to sun.
Westerdahl et al. (1996), Sweden	180	15–75	292	Never used Ever used <i>Current or past use</i> < 4 years 4–7 years ≥ 8 years	108/182 65/78 26/30 20/28 19/40	1.0 1.6 (0.9–2.8) 2.2 (0.9–4.6) 1.5 (0.7–3.5) 1.0 (0.5–2.0)	Adjusted for phenotype, naevi, sunburn; age at use and timing of use in relation to first child did not influence risk.
Smith et al. (1998), Connecticut State, USA	308	≥ 18	233	Never used Ever used <i>Current or past use</i> ≤ 2 years > 2–5 years > 5 years	170/131 138/72 60/40 29/7 49/25	1.0 1.1 (0.6–1.7) 1.3 (0.7–2.3) 0.6 (0.3–1.2) 1.4 (0.7–2.8)	Adjusted for age, marital status, hair colour, number of arm naevi, sun exposure index; no trend with duration of use and no association with age at first use
Naldi et al. (2005), Italy	316	≥ 18	308	Never used Ever used	266/258 50/60	1.0 1.1 (0.6–1.7)	Adjusted for age, education, body mass index, number of melanocytic naevi, pigmentary traits, history of sunburn and reaction to sun exposure

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Lea, et al. (2007), USA	318	20–79	395	Never used Ever used	73/92 183/194	1.0 1.3 (0.8–2.0)	

CI, confidence interval; CMM, cutaneous malignant melanoma; NR, not reported; NS, not significant; SMM, superficial spreading melanoma