

**Table 2.5. Case-control studies of sun exposure and melanoma, with site-specific outcome**

Reference, study location & period	Cases	Controls	Exposure assessment	Exposure categories	Relative risk (95%CI)*	Adjustment for potential confounders	Comments	
Chen <i>et al.</i> (1996), Connecticut USA, 1987–1989	548 (288 M; 260 F) first primary invasive from population case-register, Yale University, < 45–65+ yrs; response rate 75%; 100% histol confirmed	494 population-based controls selected by random-digit-dialling, stratified by age and sex; response rate 70%	Interviewer-administered standardized questionnaire	<i>High latitudes</i>			Age, sex, skin colour, skin type, No.naevi on arms, total rec exposure index, past sunburn, other sites sunburn	Differences in effect by sex
				<b>Recalled</b>	<u>H&amp;N sunburn</u>	<u>H&amp;N</u>		
				No		1.0		
				Yes		1.8 (0.9–3.5)		
				<u>Trunk sunburn</u>	<u>Trunk</u>			
				No		1.0		
				Yes		1.9 (1.0–3.7)		
				<u>UL sunburn</u>	<u>Upper limb</u>			
				No		1.0		
				Yes		2.0 (1.0–4.0)		
				<u>LL sunburn</u>	<u>Lower limb</u>			
				No		1.0		
				Yes		1.7 (0.9–3.2)		
						<u>H&amp;N</u>		
				Rec sun low		1.0		
				Rec sun high		2.6 (1.2–5.6)		
						<u>Trunk</u>		
				Rec sun low		1.0		
Rec sun high		2.7 (1.6–4.5)						
		<u>Upper limb</u>						
Rec sun low		1.0						
Rec sun high		2.4 (1.2–4.8)						
		<u>Lower limb</u>						
Rec sun low		1.0						
Rec sun high		2.7 (1.2–5.8)						
		<u>H&amp;N</u>						
Occ sun low		1.0						
Occ sun high		0.7 (0.5–1.0)						
		<u>Trunk</u>						
Occ sun low		1.0						
Occ sun high		0.9 (0.7–1.1)						
		<u>Upper limb</u>						
Occ sun low		1.0						
Occ sun high		0.7 (0.5–1.0)						
		<u>Lower limb</u>						
Occ sun low		1.0						
Occ sun high		0.7 (0.4–0.9)						

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Naldi <i>et al.</i> (2005) North & South Italy 1992–94	542 (226 M; 316 F) first primary melanoma cases from consecutive patients at 27 hospitals, 15–87yrs; response rate 99%; 100% histol confirmed	538 (230 M; 308 F) controls from same hospitals with non-dermatologic, non-neoplastic diseases, aged 15–92 y, response rate 99%	Interviewer-administered standardised questionnaire	<i>Middle latitude</i>			Age, sex, education, BMI, skin, hair and eye colour, sunburn propensity, past sunburn, freckles, tobacco smoking
				<b>Recalled</b>			
				<u>Ages up to 15 yrs</u>	<u>H&amp;N</u>		
				No sunburn	1.0		
				Ever sunburn	1.6 (0.7–4.1)		
					<u>Trunk</u>		
				No sunburn	1.0		
				Ever sunburn	1.1 (0.7–1.8)		
					<u>Upper limb</u>		
				No sunburn	1.0		
				Ever sunburn	0.7 (0.3–1.8)		
					<u>Lower limb</u>		
				No sunburn	1.0		
				Ever sunburn	1.5 (1.0–2.1)		
				<u>Ages &gt; 20 yrs</u>	<u>H&amp;N</u>		
				No sunburn	1.0		
				Ever sunburn	0.8 (0.4–1.7)		
					<u>Trunk</u>		
				No sunburn	1.0		
				Ever sunburn	1.5 (0.9–2.7)		
	<u>Upper limb</u>						
No sunburn	1.0						
Ever sunburn	2.1 (0.8–5.4)						
	<u>Lower limb</u>						
No sunburn	1.0						
Ever sunburn	1.2 (0.6–2.2)						
<b>Objective</b>							
<i>Solar lentigines</i>	<u>H&amp;N</u>						
Absent	1.0						
Present	1.6 (0.7–4.1)						
<i>Solar lentigines</i>	<u>Trunk</u>						
Absent	1.0						
Present	1.1 (0.7–1.8)						
<i>Solar lentigines</i>	<u>Upper limb</u>						
Absent	1.0						
Present	0.7 (0.3–1.8)						
<i>Solar lentigines</i>	<u>Lower limb</u>						
Absent	1.0						
Present	1.5 (1.0–2.1)						

**Table 2.5. Case-control studies of sun exposure and melanoma, with site-specific outcome**

Reference, study location & period	Cases	Controls	Exposure assessment	Exposure categories	Relative risk (95%CI)*	Adjustment for potential confounders	Comments	
Chang <i>et al.</i> (2009) 15 studies (Europe; Nth America; Australia)	2467	2712	14 studies	<b>Recalled</b>				No systematic association with latitude
				<u>Childhood</u>		<u>H&amp;N</u>	Age, sex	
				No sunburn		1.0		
				Ever sunburn		1.4(1.1–1.7)	Stratified by latitude: high; middle; low	
				No sunburn		<u>Trunk</u>		
				Ever sunburn		1.5 (1.3–1.7)		
					<u>Limbs</u>			
					No sunburn	1.0		
					Ever sunburn	1.5 (1.3–1.7)		
				13 studies	<u>Adulthood</u>	<u>H&amp;N</u>	*Age, sex, sunburn in childhood	Sunburn in childhood (< 15 y) and in adulthood (> 20 y) strongly correlated
				No sunburn	1.0			
				Ever sunburn	1.1 (0.9–1.3)			
				No sunburn	<u>Trunk</u>	Stratified by latitude: high; middle; low		
			Ever sunburn	1.0				
			Ever sunburn	1.3* (1.0–1.6)				
				No sunburn	<u>Limbs</u>			
				Ever sunburn	1.0			
				Ever sunburn	1.3 *(1.0–1.7)			
	5567	7033	9 studies	<u>Across latitudes</u>	<u>H&amp;N</u>	Age, sex, hair colour, tan ability, freckling	No systematic association with latitude	
				Low rec sun	1.0			
				High rec sun	1.1 (0.8–1.4)			
				Low rec sun	<u>Trunk</u>			
				High rec sun	1.0			
				High rec sun	1.7 (1.4–2.2)			
				Low rec sun	<u>Limbs</u>			
				High rec sun	1.0			
				High rec sun	1.4(1.1–1.7)			

**Table 2.5. Case-control studies of sun exposure and melanoma, with site-specific outcome**

Reference, study location & period	Cases	Controls	Exposure assessment	Exposure categories	Relative risk (95%CI)*	Adjustment for potential confounders	Comments	
Chang <i>et al.</i> (2009) (contd)	5578	7024	15 studies	<i>Low latitudes</i>	<u>H&amp;N</u>	Age, sex, hair colour, tan ability, freckling	In controls prevalence of occupational exposure varied inversely with latitude and sunburn	
				Low occ sun	1.0			
				Max occ sun	1.7 (1.0–3.0)			
				<i>Across latitudes</i>	<u>Trunk</u>			
				Low occ sun	1.0			
				Max occ sun	1.0 (0.8–1.2)			
				<i>Across latitudes</i>	<u>Limbs</u>			
				Low occ sun	1.0			
				Max occ sun	0.9(0.8–1.1)			
				7 studies	<i>High+mid-latitudes</i>			<u>H&amp;N</u>
					Low total			1.0
					Max total			1.0 (0.5–2.1)
					<i>High+mid-latitudes</i>			<u>Trunk</u>
					Low total			1.0
					Max total			0.9 (0.5–1.4)
<i>Low latitudes</i>	<u>Limbs</u>							
Low total	1.0							
Max total	1.5(1.0–2.2)							
256	1 035	3 studies	<i>Across latitudes</i>	<b>Objective</b>	Age, sex, hair colour, tan ability, freckling			
			<i>Solar keratoses</i>	<u>H&amp;N</u>				
			Absent	1.0				
			Present	3.1 (1.4–6.7)				
			<i>Solar keratoses</i>	<u>Trunk</u>				
			Absent	1.0				
			Present	1.6 (0.8–3.4)				
			<i>Solar keratoses</i>	<u>Limbs</u>				
			Absent	1.0				
Present	3.2 (1.6–6.6)							