

Sun exposure and photoprotection: Parents and grandparents habits, knowledge and attitudes towards children

Dear Editor,

Although there remains controversy about the age period when most of an individual's exposure occurs,¹ overexposure and inadequate protection from the sun during childhood seems to be a key factor in the risk of developing melanoma in adult life.²⁻⁴ Some studies focus on the strategies that parents use to protect their children from the sun⁵ but there is not a lot of literature about the role played by grandparents during summer. This e-survey was conducted among national representative samples from seven countries of parents or grandparents of children aged 12 or under who care for their (grand)children for at least 2 weeks during the 2021 summer holidays. To take into account the summer period, the survey was conducted at the end of August in five countries of the Northern Hemisphere: France, Germany, Spain, Italy and the United States and in January in Australia and Brazil. Since a lot of studies assess that there is a link between the risks of melanoma and the country of residence,^{1,6} the second aim of this study is to determine if that different level of risks comes with different behaviours.

The overall population was composed of 8120 individuals (6662 parents and 1458 grandparents). 98.0% of children were exposed to the sun during summer, 70% of them during the hours at risk with important and significant differences between countries ($p < 0.0001$). This exposure was gradual for 72.2% of them and accounted for more than 2 h by day for 35.0%. In total, 96.6% declared using at least one sun protection measures. 64.0% declared a protection every time the child goes outside in any kind of sunlight, 32.7% only during intense sun exposure. Among them, the following means of protection were used: sunscreen (94.5%), hat (76.6%), umbrella (62%), sunglasses (58.6%) and sun protective clothes (56.6%). Benefits of sunscreen use during childhood include

reduced risk of sunburn, retarding the pace of skin ageing and possible reduction in melanoma risk^{1,4}. The main reasons given by guardians for using sunscreen was to avoid sunburn (79.2%) whereas only 58.6% declared using sunscreens to lower the risk of skin cancer and 29.4% reported that the use of sunscreen in their children/grandchildren was to prevent skin ageing. Our study shows that 40.5% of parents say that their use of sunscreen is motivated by the desire to allow their child to spend more time in the sun, which could counterproductively increase the risk of future melanoma.⁷

Whether in the exposure strategies, in the means of protection used, or on the motivations, significant differences are observed according to the relationship of the child caregiver and the different countries. Table 1 summarizes the data about child protection strategies according to the relationship with the child's caregiver during the summer vacations (parent or grandparent). Table 2 summarizes the data about child protection strategies according to the country of the caregiver (France, Germany, Spain, Italy, the United States, Brazil and Australia).

While grandparents appear to adopt more cautious behaviours than parents, the importance that should be given to sun prevention in children is not yet optimal. Preventive messages and information dissemination seem to be effective to improve this situation. Countries particularly affected by melanoma and where a significant communication campaign has been set up, such as Australia, show behaviours that are now more in line with international recommendations: 50% of the children in Italy are exposed more than 2 h versus 17.4% in Australia ($p < 0.0001$). 71.8% of Australians declared that they always protect their children from the sun, regardless of the intensity of exposure, compared to only 55.2% of Brazilians ($p < 0.0001$).

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TABLE 1 Data by parentage link

	Exposure habits					
	Exposure between 11 and 17 h ($p = 0.0078$)		Non-progressive exposure (NS)		More than 2 h of exposure ($p < 0.0001$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Total	5687	70.04	2214	27.84	2787	35.04
Parent	4708	70.67	1852	28.26	2358	35.99
Grandparent	979	67.15	362	25.84	429	30.62
	Protection against the sun ($p < 0.0001$)					
	Yes, every time		Yes, but only during intense solar exposure		No	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Total	5195	63.98	2651	32.65	274	3.37
Parent	4216	63.28	2245	33.70	201	3.02
Grandparent	979	67.15	406	27.85	73	5.01
	Means of protection					
	Umbrella ($p = 0.0010$)		Sun cream ($p = 0.0366$)		Hat ($p = 0.0054$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Total	4865	62.01	7415	94.51	6006	76.55
Parent	4060	62.84	6090	94.26	4906	75.93
Grandparent	805	58.12	1325	95.67	1100	79.42
	Sun protective clothes ($p < 0.0001$)		Sunglasses ($p < 0.0001$)		Food supplements ($p < 0.0001$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
	Total	4439	56.58	4596	58.58	1716
Parent	3579	55.39	3897	60.32	1568	24.27
Grandparent	860	62.09	699	50.47	148	10.69
	Use of sunscreen					
	Special sun creams for children ($p = 0.0002$)		Application every 2 h on sunny days (NS)		Application every 2 h on cloudy days (NS)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Total	6409	86.43	1374	18.53	781	10.53
Parent	5222	85.75	1110	18.23	633	10.39
Grandparent	1187	89.58	264	19.92	148	11.17
	Motivations for the use of sunscreen					
	To avoid sunburns ($p < 0.0001$)		Allow the child to spend more time under the sun (NS)		Due to the child history of sunburns ($p < 0.0001$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Total	5874	79.22	3003	40.50	950	12.81
Parent	4749	77.98	2435	39.98	888	14.58
Grandparent	1125	84.91	568	42.87	62	4.68
	Lower the risk of skin cancer (NS)		Prevent skin ageing ($p < 0.0001$)			
	<i>N</i>	%	<i>N</i>	%		
	Total	4346	58.61	2178	29.37	
Parent	3583	58.83	1866	30.64		
Grandparent	763	57.58	312	23.55		

TABLE 2 Data by country

Respondents by country	Description of the population					
	Sample population		Parents		Grandparents	
	N	%	N	%	N	%
Total	8120	100	6662	82.04	1458	17.96
France	1189	14.64	1019	85.70	170	14.30
Germany	1172	14.43	958	81.74	214	18.26
Spain	1190	14.66	998	83.87	192	16.13
Italy	1151	14.17	939	81.58	212	18.42
United States	1488	18.33	1190	79.97	298	20.03
Brazil	1183	14.57	996	84.19	187	15.81
Australia	747	9.20	562	75.23	185	24.77
	Exposure habits					
	Exposure between 11 and 17 h ($p < 0.0001$)		Non-progressive exposure($p < 0.0001$)		More than 2 h of exposure ($p < 0.0001$)	
	N	%	N	%	N	%
Total	5687	70.04	2214	27.84	2787	34.32
France	787	66.19	370	32.17	445	37.43
Germany	991	84.56	406	35.55	458	39.08
Spain	881	74.03	299	25.38	433	36.39
Italy	764	66.38	214	18.71	576	50.04
United States	1191	80.04	461	31.66	423	28.43
Brazil	530	44.80	232	20.00	322	27.22
Australia	543	72.69	232	32.04	130	17.40
	Protection against the sun ($p < 0.0001$)					
	Yes, every time		Yes, but only during intense solar exposure		No	
	N	%	N	%	N	%
Total	5195	63.98	2651	32.65	274	3.37
France	765	64.34	376	31.62	48	4.04
Germany	742	63.31	379	32.34	51	4.35
Spain	837	70.34	343	28.82	10	0.84
Italy	755	65.60	377	32.75	19	1.65
United States	907	60.95	498	33.47	83	5.58
Brazil	653	55.20	495	41.84	35	2.96
Australia	536	71.75	183	24.50	28	3.75
	Means of protection					
	Umbrella ($p < 0.0001$)		Sun cream ($p < 0.0001$)		Hat ($p < 0.0001$)	
	N	%	N	%	N	%
Total	4865	62.01	7415	94.51	6006	76.55
France	782	68.54	1074	94.13	1001	87.73
Germany	747	66.64	1058	94.38	874	77.97

(Continues)

TABLE 2 (Continued)

	Means of protection					
	Umbrella ($p < 0.0001$)		Sun cream ($p < 0.0001$)		Hat ($p < 0.0001$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Spain	953	80.76	1152	97.63	786	66.61
Italy	1051	92.84	1099	97.08	923	81.54
United States	321	22.85	1274	90.68	966	68.75
Brazil	869	75.70	1087	94.69	794	69.16
Australia	142	19.75	671	93.32	662	92.07
	Sun protective clothes ($p < 0.0001$)		Sunglasses ($p < 0.0001$)		Food supplements ($p < 0.0001$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
	Total	4439	56.58	4596	58.58	1716
France	550	48.20	903	79.14	107	9.38
Germany	795	70.92	726	64.76	175	15.61
Spain	569	48.22	561	47.54	199	16.86
Italy	452	39.93	695	61.40	230	20.32
United States	937	66.69	923	65.69	420	29.89
Brazil	511	44.51	424	36.93	379	33.01
Australia	625	86.93	364	50.63	206	28.65
	Focus on the use of sunscreen					
	Special sun creams for children ($p < 0.0001$)		Application every 2 h on sunny days ($p < 0.0001$)		Application every 2 h on cloudy days ($p < 0.0001$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Total	6409	86.43	1374	18.53	781	10.53
France	901	83.89	232	21.60	117	10.89
Germany	864	81.66	148	13.99	49	4.63
Spain	1064	92.36	264	22.92	167	14.50
Italy	997	90.72	143	13.01	97	8.83
United States	1085	85.16	225	17.66	142	11.15
Brazil	954	87.76	220	20.24	111	10.21
Australia	544	81.07	142	21.16	98	14.61
	Motivations for the use of sunscreen					
	To avoid sunburns ($p < 0.0001$)		Allow the child to spend more time under the sun ($p < 0.0001$)		Due to the child history of sunburns ($p < 0.0001$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Total	5874	79.22	3003	40.50	950	12.81
France	868	80.82	316	29.42	135	12.57
Germany	843	79.68	445	42.06	123	11.63
Spain	970	84.20	414	35.94	115	9.98
Italy	897	81.62	428	38.94	130	11.83
United States	979	76.84	634	49.76	229	17.97

TABLE 2 (Continued)

	Motivations for the use of sunscreen					
	To avoid sunburns ($p < 0.0001$)		Allow the child to spend more time under the sun ($p < 0.0001$)		Due to the child history of sunburns ($p < 0.0001$)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Brazil	773	71.11	457	42.04	129	11.87
Australia	544	81.07	309	46.05	89	13.26
	Lower the risk of skin cancer ($p < 0.0001$)		Prevent skin ageing ($p < 0.0029$)			
	<i>N</i>	%	<i>N</i>	%		
Total	4346	58.61	2178	29.37		
France	559	52.05	354	32.96		
Germany	669	63.23	264	24.95		
Spain	684	59.38	350	30.38		
Italy	536	48.77	307	27.93		
United States	690	54.16	378	29.67		
Brazil	725	66.70	314	28.89		
Australia	483	71.98	211	31.45		

AUTHOR CONTRIBUTIONS

Organization of the study, construction and administration of the questionnaire, writing of the article: Charles Taieb. Statistical analysis and writing of the article: Adrien Marquie. Construction of the questionnaire and writing of the article: Marketa Saint Aroman, Ariadna Ortiz Brugués, Catherine Baissac, Gaëlle Le Fur.

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CONFLICT OF INTEREST

Marketa Saint Aroman, Ariadna Ortiz Brugués and Catherine Baissac are employed by Pierre Fabre. The remaining authors declare no conflict of interest.


DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The nature of the study and the questions asked did not require submission to an ethics committee. before answering the questionnaire, the patient's agreement was requested after describing the purpose of the study.

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