

# Sun Protection Counseling by Pediatricians has Little Effect on Parent and Child Sun Protection Behavior

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**Objective** To compare counseling concerning sun protection and outdoor exercise with the parent's report of the behavior of a child aged 9-16 years old.

**Study design** Structured interviews of medical personnel in 3 Chicago area practices elicited information about counseling methods and recommendations. In each practice, a convenience sample of parents completed a self-reported survey of their and their child's behavior.

**Results** Sun protection counseling occurred more frequently than exercise counseling in all practices ( $P = .014$ ). Sun protection counseling was associated with parental prompting ( $P = .004$ ), performing a summer camp physical ( $P = .002$ ), and the child having a sunburn ( $P = .003$ ). After controlling for the child's age, sex, and skin tone, sun protection counseling was not associated with the child's use of sun protection. In multivariate analysis of the child's sun protection behavior, parental sunburns, indoor tanning in the last 12 months, perception of skin cancer risk, and sun protection self-efficacy were significant ( $P = .02$ ). Children who pursued outdoor sports were twice as likely to use inadequate sun protection and sustain sunburns (CI 1.3-1.7).

**Conclusions** The child's sun protection behavior was influenced by parental sun protection, parental perception of skin cancer risk, and parental sun protection self-efficacy; therefore, sun protection for children needs to be aimed at parents as well as children. Communication with parents in a way that incorporates the principles of motivational interviewing may be more effective in promoting behavioral change than admonitions to use sunscreen. (*J Pediatr* 2013;162:381-6).

Unprotected sun exposure, a risk for the development of skin cancer, is one of the reasons that between 1 and 3 million people were diagnosed with non-melanoma skin cancer in the US in 2010.<sup>1-3</sup> Melanoma incidence increased by 2.4% annually from 1975-2002, and is associated with childhood sun exposure.<sup>4,5</sup> Both non-melanoma skin cancer and melanoma can be prevented by the regular use of sunscreen with a sun protection factor (SPF) of 15 or greater.<sup>6,7</sup> The American Academy of Pediatrics recognized that childhood and adolescence are critical periods of vulnerability; thus, childhood seems to be the ideal time to intervene to establish sun protective behaviors to prevent the subsequent development of skin cancer.<sup>8</sup> Despite this vulnerability, children learn to desire a tan and reduce the use of sunscreen between fifth and eighth grades.<sup>9</sup> Beginning in early adolescence, the use of sun protection steadily declines and reaches its lowest levels by high school and young adult years.<sup>10,11</sup>

In 2011, the US Preventive Services Task Force recommended sun protection counseling by primary care physicians for children and adolescents at risk to sunburn.<sup>12</sup> Sun protection consists of wearing sun-protective clothing when exposed to sunlight, using sunscreen with a SPF of 15 or higher, seeking shade, limiting outdoor activities between 10 a.m. and 4 p.m., and avoiding artificial sources of ultraviolet light, such as indoor tanning.

In this study, pediatricians and the health care personnel (HCP) working with them were interviewed about the timing and manner of their counseling and recommendations regarding sun protection and exercise. In addition, the parent accompanying a child to the visit with the pediatrician was surveyed about the parent's and child's performance of sun protection and regular planned exercise. Our hypothesis was that sun protection counseling by HCP would be associated with use of sun protection.

## Methods

The 3 Chicago area ambulatory practices, which are part of the Pediatric Practice Research Group, were identified with the assistance of the Community-Engaged Research Center of the Northwestern University Clinical and Translational Sciences Institute. Practices were selected based on at least 1 of the pediatricians having an interest in participating in skin cancer prevention research and on the location of the practice. This study was approved by the Northwestern University

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HCP Health care personnel  
SPF Sun protection factor

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Institutional Review Board, and all participants provided written informed consent prior to participation. Participants did not receive compensation.

At each site, pediatricians and other HCP were approached and asked to participate in a structured interview regarding prevention of obesity and sunburns lasting approximately 15 minutes. The structured interviews included 21 questions addressing participant demographics, including whether the participant was a pediatrician, nurse practitioner, nurse, or nursing assistant, and sex of the HCP; counseling methods (verbal, distribution of brochures) and recommendations regarding sun protection and regular exercise (Table I). Educational materials distributed by each practice were reviewed for sun protection and regular exercise recommendations. Participants were assured that their responses were anonymous, and they would not be shared with others in the practice. Participants were asked to respond to the questions honestly.

From June to August 2010, the research assistant visited each practice site to accrue a convenience sample of at least 100 parents with a child between the ages of 9 and 16 years old. The research assistant administered a 46-item survey to the parent about their sun protection behavior, history of sunburning, and their child's sun protection and sunburning. In addition, the parent's habits of engaging in regular

planned exercise, especially with reference to outdoor activities between 10 a.m. and 4 p.m., as well as the child's engagement in outdoor sports activities between 10 a.m. and 4 p.m., were reviewed. The measures were previously used by our research team and others.<sup>13-15</sup>

For the parent and the child, daily sun exposure on summer weekdays and weekends was reported from the response options of 30 minutes or less, 31 minutes to 1 hour, 2, 3, 4, 5, or 6 hours (coefficient  $\alpha = .79$ ). Frequency of deliberate tanning in the sun was reported with a 5-point Likert-type scale (coefficient  $\alpha = .87$ ). History of ever using indoor tanning had a dichotomous response, and frequency of indoor tanning in the last 12 months was provided numerically. Four sun protection behaviors (wearing sunscreen with an SPF greater than 15, wearing a shirt with sleeves, wearing a hat with a brim, and seeking shade) were reported with a 5-point Likert-type scale (coefficient  $\alpha = .88$ ). Intentions to perform sun protection were assessed with 5 questions with 5-point Likert-type scale responses (coefficient  $\alpha = .92$ ). The following 2 questions assessed sun protection self-efficacy with a 5-point Likert-type scale: confidence that you know the best sunscreen, and you will be able to limit your outdoor activities, including exercise, to before 10 a.m. and after 4 p.m. (coefficient  $\alpha = .93$ ).

The child's skin type was classified by the color of untanned skin with response options of very fair, fair, golden/olive, light brown, dark brown, and very dark; and sun sensitivity with a 5-point Likert-type scale (coefficient  $\alpha = .83$ ). Lastly, parental awareness of risk of developing skin cancer and concern about developing skin cancer were assessed with a 5-point Likert-type scale (coefficient  $\alpha = .81$ ).

For adults, regular exercise was assessed as planned physical activity such as brisk walking, jogging, bicycling, swimming, dancing, tennis, rowing, or lifting weights that makes you breathe much harder than normal and is done 3 or more times a week for 20 minutes or more a session, or moderate activity that makes you breathe a bit harder than normal and is done 5 or more days a week for 30 minutes or more a day. Dichotomous responses were provided to the questions about engaging in regular exercise and outdoor exercise. If exercise was outdoors, adults provided the time of day that they were outdoors. For children, dichotomous responses were provided to questions concerning the child's participation in regular physical activity and organized sports. In addition, a dichotomous response was obtained to the question of whether the physical activity and/or organized sports occurred outdoors between 10 a.m. and 4 p.m.

Demographic characteristics obtained were age, sex, annual household income, area of residence (a rural area, small town, suburb, or urban area), and ethnicity.

**Statistical Analyses**

Statistical analysis was done using Fisher exact test. Comparisons of rates of counseling across the different types of counseling and the practices were made using McNemar test.

**Table I. Sun protection and physical activity counseling by pediatricians and their office staff**

Variable	Office 1	Office 2	Office 3
<b>Sun protection</b>			
Visit type			
Well care	x	-	-
School physical	x	-	-
Summer camp physical	x	x	x
Acute care	-	-	-
Child sunburned	x	x	x
Time of year			
All year	x	-	-
Spring/summer	x	x	-
Family vacation to sunny location	x	x	x
Recommendation			
Sun block	x	x	x
Reapply sun block	x	x	-
Protective clothing	x	-	-
Seek shade	x	-	-
Avoid sun 10 a.m. to 4 p.m.	-	-	-
<b>Physical activity</b>			
Visit type			
Well care	x	-	-
School physical	x	x	-
Camp physical	-	-	-
Acute care	-	-	-
Child obese	x	x	x
Child high cholesterol	x	x	-
Time of year			
All year	x	-	-
Spring/summer	x	x	-
Recommendation			
Regular exercise	x	x	
Outdoor activities	x	x	
Enjoyable physical activity			x
Activities increasing heart rate		x	
Sum of variables (n = 25) (%)	19 (76)	13 (52)	6 (24)*

\* $\chi^2$ ,  $P < .05$ , counseling varied among practices.

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