**RESEARCH LETTERS**

**Sunscreen Use: Non-Hispanic Blacks Compared With Other Racial and/or Ethnic Groups**

Although up to 14% of non-Hispanic blacks (NHBs) experience sunburns, they rarely use sunscreen.1,2 Whites are at least twice as likely to wear sunscreen than NHBs.3,4 Hispanics are more likely to wear sunscreen than NHBs, even though many Hispanics have a darker skin phototype than some NHBs.5-7 Given these differences, we sought to determine factors influencing sunscreen use in NHBs compared with other racial and ethnic groups.

**Methods.** Data from the dermatology section of the 2003-2006 National Health and Nutrition Examination Survey (NHANES)6 were examined. The 2 following questions were analyzed: (1) If after several months of not being in the sun you then went out in the sun without sunscreen or protective clothing for half an hour, which of the following would happen to your skin? and (2) When you go outside on a very sunny day for more than 1 hour, how often do you use sunscreen?6 Sex, ethnicity and/or race, age, annual income, and education were evaluated for their association with the dermatology survey answers.

Weighted estimates of responses to each question and the subject characteristics were created using survey frequency and means procedures. Survey logistic regression procedures, assuming proportional odds, were fit to each question. When the proportional odds assumption was questionable, inferences were compared against those of the generalized logit model. A multivariable model for sunscreen use was fit using all univariable predictors. Interactions between each variable and ethnicity and/or race were evaluated. Where interactions were significant, subgroup analyses were performed comparing ethnicities and/or races within each level of the other variable included in the model. Analyses were performed using SAS software, version 9 (SAS Institute Inc, Cary, North Carolina).

**Results.** Participants' demographic characteristics and answers to survey questions are summarized in **Table 1**. The **Figure** shows skin reactivity to the sun based on ethnicity and/or race. Multivariable analysis revealed that ethnicity and/or race, sex, income, education, and skin reactivity affected sunscreen use (**Table 2**).

Further analysis showed that NHBs who reported severe sunburns were 7 times less likely to use sunscreen than were non-Hispanic whites who reported severe sunburns. Among participants who had severe sunburns, there was no difference in sunscreen use for the other ethnic groups (Mexican American, other Hispanic, and other race) compared with non-Hispanic whites.

**Comments.** In this study, NHB participants had a similar relative likelihood of not wearing sunscreen even if they have a propensity to severely sunburn, a finding comparable to other studies.1,2 Also consistent with other studies is the positive influence on sunscreen use of female sex, higher income, and higher education.4 The lack of sunscreen use by NHBs, including those who sunburn, may be explained by underlying cultural differences as well as limited knowledge about skin cancer.7 One survey found 70% of NHBs, 14% of whom experienced burns, were not aware that NHBs can develop skin cancer.2 Another survey of NHBs found 43% had the propensity to sunburn, yet only 35% felt that they had a risk to develop skin cancer.8 Acknowledgment of skin cancer risk did not influence their sun protection behavior.8

The lack of sunscreen use by NHBs may have stemmed from rare familial and community experiences of skin can-

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**Table 1. Characteristics of Sample**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Raw Frequency, No. (Weighted %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity and/or race</td>
<td></td>
</tr>
<tr>
<td>Mexican American</td>
<td>1377 (9)</td>
</tr>
<tr>
<td>Other Hispanic</td>
<td>251 (4)</td>
</tr>
<tr>
<td>Non-Hispanic white</td>
<td>3071 (69)</td>
</tr>
<tr>
<td>Non-Hispanic black</td>
<td>1525 (12)</td>
</tr>
<tr>
<td>Other race, including multiracial</td>
<td>225 (6)</td>
</tr>
<tr>
<td>Total</td>
<td>6549 (100)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3082 (49)</td>
</tr>
<tr>
<td>Female</td>
<td>3467 (51)</td>
</tr>
<tr>
<td>Total</td>
<td>6549 (100)</td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>1977 (25)</td>
</tr>
<tr>
<td>30-39</td>
<td>1688 (25)</td>
</tr>
<tr>
<td>40-49</td>
<td>1631 (28)</td>
</tr>
<tr>
<td>50-59</td>
<td>1253 (22)</td>
</tr>
<tr>
<td>Total</td>
<td>6549 (100)</td>
</tr>
<tr>
<td>Annual income, $US/yr</td>
<td></td>
</tr>
<tr>
<td>&lt;45 000</td>
<td>3456 (46)</td>
</tr>
<tr>
<td>&gt;45 000</td>
<td>2829 (54)</td>
</tr>
<tr>
<td>Total</td>
<td>6285 (100)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>&lt;High school</td>
<td>1545 (16)</td>
</tr>
<tr>
<td>High school or GED</td>
<td>1574 (24)</td>
</tr>
<tr>
<td>&gt;High school</td>
<td>3425 (60)</td>
</tr>
<tr>
<td>Total</td>
<td>6544 (100)</td>
</tr>
<tr>
<td>Skin reaction to sun</td>
<td></td>
</tr>
<tr>
<td>Severe sunburn blisters</td>
<td>149 (3)</td>
</tr>
<tr>
<td>Severe sunburn peeling</td>
<td>522 (10)</td>
</tr>
<tr>
<td>Mildly burned tanning</td>
<td>1612 (31)</td>
</tr>
<tr>
<td>Darker without sunburn</td>
<td>1435 (20)</td>
</tr>
<tr>
<td>Nothing in half an hour</td>
<td>2761 (36)</td>
</tr>
<tr>
<td>Total</td>
<td>6522 (100)</td>
</tr>
<tr>
<td>Use sunscreen</td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>579 (11)</td>
</tr>
<tr>
<td>Most of the time</td>
<td>745 (14)</td>
</tr>
<tr>
<td>Sometimes</td>
<td>1167 (22)</td>
</tr>
<tr>
<td>Rarely</td>
<td>792 (14)</td>
</tr>
<tr>
<td>Never</td>
<td>3177 (39)</td>
</tr>
<tr>
<td>Total</td>
<td>6460 (100)</td>
</tr>
</tbody>
</table>

Abbreviation: GED indicates general educational development.
cancer and lack of dialogue within families and with health care providers. Prior national dermatology screening and education programs only included 1.2% of NHBs, thus limiting interaction with health care providers. In addition, mainstream magazines with predominantly white readership had 5 times as many sun protection ads as magazines oriented toward NHBs. Future education of NHBs on skin cancer risk and sunscreen use is warranted, especially for the group that experiences sunburns.

Table 2. Multivariable Proportional Odds for Sunscreen Use

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Odds Ratio (95% Confidence Interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity and/or race</td>
<td></td>
</tr>
<tr>
<td>Mexican American vs non-Hispanic white</td>
<td>0.75 (0.64-0.88)</td>
</tr>
<tr>
<td>Other Hispanic vs non-Hispanic white</td>
<td>0.67 (0.47-0.97)</td>
</tr>
<tr>
<td>Non-Hispanic black vs non-Hispanic white</td>
<td>0.14 (0.12-0.17)</td>
</tr>
<tr>
<td>Other race, including multiracial, vs non-Hispanic white</td>
<td>0.72 (0.52-0.98)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female vs Male</td>
<td>2.66 (2.31-3.06)</td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
</tr>
<tr>
<td>30-39 vs 20-29</td>
<td>1.03 (0.86-1.24)</td>
</tr>
<tr>
<td>40-49 vs 20-29</td>
<td>1.11 (0.94-1.30)</td>
</tr>
<tr>
<td>50-59 vs 20-29</td>
<td>0.88 (0.72-1.09)</td>
</tr>
<tr>
<td>Annual family income $US</td>
<td></td>
</tr>
<tr>
<td>≥45 000 vs &lt;45 000</td>
<td>1.84 (1.60-2.12)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>High school vs &lt;high school</td>
<td>1.87 (1.41-2.47)</td>
</tr>
<tr>
<td>&gt;High school vs &lt;high school</td>
<td>4.71 (3.72-5.97)</td>
</tr>
<tr>
<td>Skin reaction to sun</td>
<td></td>
</tr>
<tr>
<td>Severe sunburn with blisters or peeling vs nothing</td>
<td>2.77 (2.42-3.18)</td>
</tr>
<tr>
<td>Mildly burned vs nothing</td>
<td>2.03 (1.80-2.30)</td>
</tr>
<tr>
<td>Darker without sunburn vs nothing</td>
<td>1.29 (1.09-1.54)</td>
</tr>
</tbody>
</table>

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Author Contributions: All authors had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Summers and Bordeaux. Acquisition of data: Arrigain. Analysis and interpretation of data: Bena, Arrigain, Alexis, Cooper, and Bordeaux. Drafting of the manuscript: Summers. Critical revision of the manuscript for important intellectual content: Summers, Bena, Arrigain, Alexis, Cooper, and Bordeaux. Statistical analysis: Bena, Arrigain, and Bordeaux. Obtained funding: Cooper and Bordeaux. Administrative, technical, and material support: Summers and Cooper. Study supervision: Cooper and Bordeaux.

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