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# Skin cancer surveillance behaviors among US Hispanic adults

Elliot J. Coups, PhD,<sup>a,b,c</sup> Jerod L. Stapleton, PhD,<sup>a,b</sup> Shawna V. Hudson, PhD,<sup>a,c,e</sup>  
Amanda Medina-Forrester, MA, MPH,<sup>a</sup> Stephen A. Rosenberg, MSc,<sup>a</sup> Marsha Gordon, MPH,<sup>a</sup>  
Ana Natale-Pereira, MD, MPH,<sup>f</sup> and James S. Goydos, MD<sup>a,d</sup>  
*New Brunswick, Piscataway, and Newark, New Jersey*

**Background:** Little skin cancer prevention research has focused on the US Hispanic population.

**Objective:** This study examined the prevalence and correlates of skin cancer surveillance behaviors among Hispanic adults.

**Methods:** A population-based sample of 788 Hispanic adults residing in 5 southern and western states completed an online survey in English or Spanish in September 2011. The outcomes were ever having conducted a skin self-examination (SSE) and having received a total cutaneous examination (TCE) from a health professional. The correlates included sociodemographic, skin cancer–related, and psychosocial factors.

**Results:** The rates of ever conducting a SSE or having a TCE were 17.6% and 9.2%, respectively. Based on the results of multivariable logistic regressions, factors associated with ever conducting a SSE included older age, English linguistic acculturation, a greater number of melanoma risk factors, more frequent sunscreen use, sunbathing, job-related sun exposure, higher perceived skin cancer risk, physician recommendation, more SSE benefits, and fewer SSE barriers. Factors associated with ever having a TCE were older age, English linguistic acculturation, a greater number of melanoma risk factors, ever having tanned indoors, greater skin cancer knowledge, higher perceived skin cancer severity, lower skin cancer worry, physician recommendation, more TCE benefits, and fewer SSE barriers.

**Limitations:** The cross-sectional design limits conclusions regarding the causal nature of observed associations.

**Conclusions:** Few Hispanic adults engage in skin cancer surveillance behaviors. The study highlights Hispanic subpopulations that are least likely to engage in skin cancer surveillance behaviors and informs the development of culturally appropriate interventions to promote these behaviors. (*J Am Acad Dermatol* 2013;68:576-84.)

**Key words:** acculturation; Hispanic; Latino; physician skin examination; prevention; skin cancer; skin self-examination.

To date, almost all melanoma prevention research studies, public health programs, and educational materials target non-Hispanic white populations. Although non-Hispanic white

individuals have the highest melanoma incidence, Hispanic individuals are more likely to be given a diagnosis of the disease at a younger age, present with more advanced disease, and have a poorer

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From The Cancer Institute of New Jersey, New Brunswick<sup>a</sup>; Departments of Medicine,<sup>b</sup> Family Medicine and Community Health,<sup>c</sup> and Surgery,<sup>d</sup> University of Medicine and Dentistry of New Jersey—Robert Wood Johnson Medical School, New Brunswick; Department of Health Education and Behavioral Science, University of Medicine and Dentistry of New Jersey—School of Public Health, Piscataway<sup>e</sup>; and Department of Medicine, University of Medicine and Dentistry of New Jersey—New Jersey Medical School, Newark.<sup>f</sup>

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Reprint requests: Elliot J. Coups, PhD, The Cancer Institute of New Jersey, 195 Little Albany St, Room 5567, New Brunswick, NJ 08901. E-mail: [coupsej@umdnj.edu](mailto:coupsej@umdnj.edu).

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survival rate.<sup>1</sup> The age-adjusted annual incidence of melanoma among Hispanics increased by 19% from 1992 (3.95 per 100,000) to 2008 (4.70 per 100,000).<sup>2</sup> The underlying reasons for this increase remain to be determined. The US Hispanic population is growing more rapidly than any other racial/ethnic group.<sup>3</sup> In 2010, there were 50.5 million Hispanics in the United States and this number is expected to double by 2050.<sup>3,4</sup> Greater attention is warranted to promote melanoma prevention and control among US Hispanics.<sup>5</sup>

Early detection of melanoma is associated with reduced morbidity, lower costs, and potentially more favorable disease prognosis and survival.<sup>6</sup> Skin cancer surveillance behaviors that facilitate early detection of melanoma include skin self-examination (SSE) and total cutaneous examination (TCE) performed by a health care provider. Guidelines regarding skin cancer surveillance behaviors are inconsistent. However, several prominent national organizations recommend routine skin cancer surveillance<sup>7-9</sup> to facilitate detection of early-stage disease that is most amenable to treatment.<sup>10-12</sup> An estimated 40% to 55% of melanoma lesions are self-detected by patients,<sup>13</sup> primarily via incidental examination of the skin as opposed to during a full-body SSE.<sup>14</sup> Thus, promoting regular, thorough SSE may further increase patient detection of early-stage melanoma. Receipt of TCE represents an important complementary approach for early detection of melanoma.<sup>15</sup>

Relatively little research has focused on skin cancer surveillance behaviors among Hispanics. In a review of 9 studies of skin cancer screening among Hispanics, rates of SSE and TCE varied from 13% to 50% and 7% to 17%, respectively,<sup>16</sup> which are lower than those found in the US population in general and among non-Hispanic white individuals, specifically.<sup>14,17-19</sup> The majority of these studies focused on convenience samples and little consideration has been given to identifying potential correlates of Hispanics' skin cancer surveillance behaviors. In a recent study, we used data from the nationally representative 2010 National Health Interview Survey to examine correlates of ever having a TCE in a sample of 4766 Hispanic adults.<sup>19</sup> Only 7.2% of

the sample reported ever having a TCE (compared with 25.4% among non-Hispanic whites). Factors associated with a higher rate of TCE included greater acculturation to US cultural norms, being female, older age, higher educational level, having health care coverage, and having more sun-sensitive skin.

This study extends the literature on skin cancer surveillance behaviors among US Hispanic adults by using a probability-based sampling approach, examining the prevalence of both SSE and TCE, and considering theory-driven correlates of both SSE and TCE. Selection of potential correlates of skin cancer surveillance behaviors was theoretically guided by the Preventive Health Model, which outlines background, affective, cognitive, and social determinants of health behaviors.<sup>20</sup> Based on the theoretical model and prior research findings (primarily among non-Hispanic white individuals)<sup>14,17,19</sup> we specified a priori hypotheses for several correlates. With regard to potential psychosocial correlates, we hypothesized that SSE and TCE would be more commonly reported among individuals with greater skin cancer knowledge, higher perceived skin cancer risk and severity, lower skin cancer worry, a physician recommendation, and higher perceived benefits and lower perceived barriers to undergoing screening. Among the sociodemographic correlates, we hypothesized that individuals would be more likely to report conducting a SSE and receiving a TCE if they were denoted as English as opposed to Spanish acculturated. We also hypothesized that individuals with a greater number of melanoma risk factors would be more likely to report both SSE and TCE. Identifying the correlates of skin cancer surveillance behaviors among Hispanics directly informs the content of future interventions to promote these behaviors in this important, yet understudied population.

Full details regarding the study procedure and participants are available elsewhere<sup>21</sup> and are summarized here. Study participants were recruited from a nationally representative World Wide Web panel of US Hispanic adults—KnowledgePanel

## CAPSULE SUMMARY

- Little is known about the prevalence and correlates of skin cancer surveillance behaviors among US Hispanic adults.
- Few Hispanic adults have ever conducted a skin self-examination or received a total cutaneous examination from a health professional; engagement in these behaviors is particularly low in several subgroups, including those who are acculturated to the Spanish language and individuals lacking a physician recommendation.
- Efforts are needed to promote skin cancer surveillance behaviors among at-risk Hispanics.

## METHODS

### Procedure

Full details regarding the study procedure and participants are available elsewhere<sup>21</sup> and are summarized here. Study participants were recruited from a nationally representative World Wide Web panel of US Hispanic adults—KnowledgePanel

Latino—administered by the research company, Knowledge Networks (Palo Alto, CA). For the current study, an e-mail invitation was sent to a random selection of panel members living in California, Arizona, Texas, New Mexico, or Florida. We selected these 5 southern and western US states because they have relatively high ultraviolet indexes and high percentages of Hispanic residents.<sup>22</sup> Individuals who reported no personal history of skin cancer were eligible to complete an online survey in English or Spanish. Survey items that were not already available in Spanish were professionally translated and further refined for plain language adaptation by several bilingual research staff members. Study recruitment and survey completion occurred between September 14 and 26, 2011. Institutional review board approval was obtained for this research.

### Participants

The survey was completed by 788 participants (46.6% of eligible individuals), 47.7% of whom completed it in Spanish. One individual was missing data for both SSE and TCE, leaving an available sample size of 787 for the current analyses. As outlined in the “Statistical analyses” section, all of the inferential statistical analyses included weighting to adjust for potential demographic differences between study participants and decliners.

### Measures

The English- and Spanish-language surveys used in this study are available from the first author.

**Sociodemographic factors.** Participants reported their gender, age, highest level of education, health insurances status, and Hispanic heritage. We assessed participants’ linguistic acculturation using 18 items drawn from the Bidimensional Acculturation Scale for Hispanics.<sup>23</sup> Following standard scoring procedures,<sup>23</sup> we assigned participants to 1 of 3 groups: bicultural (high Spanish acculturation, high English acculturation); Spanish acculturated (high Spanish acculturation, low English acculturation); or English acculturated (high English acculturation, low Spanish acculturation). (Additional details are available elsewhere.<sup>21</sup>)

**Skin cancer–related factors.** Participants completed questions regarding multiple skin cancer risk factors. Drawing on prior research,<sup>24,25</sup> we categorized individuals as to whether they had each of the risk factors as follows: have naturally red or blonde hair; have blue, green, or gray eyes; have at least a few freckles; have very fair or fair untanned skin color; would get a severe or moderate sunburn if

exposed to midday summer sun without protection; have had a severe sunburn with blisters; have at least 1 mole larger than a pencil eraser; and have at least 1 first-degree relative given a diagnosis of melanoma. We calculated the total number of melanoma risk factors (from 0-8) for each participant.

Participants completed recommended survey items regarding multiple skin cancer preventive (sunscreen use, shade seeking, and use of sun-protective clothing) and risk (sunbathing and indoor tanning) behaviors. Participants used a 5-point response scale (from “never” to “always”) to indicate how often they used sunscreen (1 item), stayed in the shade (1 item), and wore sun-protective clothing (3 items: long-sleeved shirt, long pants or other clothing that reaches the ankles, wide-brimmed hat) when outside on a warm sunny day.<sup>26</sup> Responses to the 3 clothing items were averaged to create a sun-protective clothing index ( $\alpha = .63$ ). Single items assessed how often participants sunbathe (using a 5-point response scale from “never” to “always”)<sup>26</sup> and whether they had ever engaged in ultraviolet indoor tanning.<sup>27</sup> Participants reported whether they had a sunburn in the past year. Participants indicated whether they currently worked at a job that required them to be outside in the sun, and if so, how many hours per week they worked in the sun.

**Psychosocial factors.** Skin cancer knowledge was assessed using 8 true-false questions adapted from prior research.<sup>28,29</sup> We calculated the number of correct answers. Perceived skin cancer risk,<sup>30</sup> severity,<sup>25</sup> and worry<sup>31</sup> were each assessed by averaging responses to 2 items with 5-point response scales ( $\alpha = .92, .86,$  and  $.81,$  respectively). A single item assessed whether a physician (or other health professional) had recommended that the participant check his/her body for skin cancer. SSE benefits and barriers were assessed with 3-item ( $\alpha = .95$ ) and 4-item measures (using a 5-point response scale from “strongly disagree” to “strongly agree”), respectively.<sup>32</sup> TCE benefits and barriers were each assessed using 3-item measures ( $\alpha = .79$  for TCE benefits) (with a 5-point response scale from “strongly disagree” to “strongly agree”).<sup>32</sup> For each of the SSE and TCE benefits and barriers measures, we averaged the responses to the respective items to create summary scores. Internal consistency reliability statistics are not presented for the SSE and TCE barriers items, as individuals’ perceptions of different barriers are not necessarily expected to be associated with each other.<sup>33</sup>

**Skin cancer surveillance behaviors.** Participants indicated whether they had ever conducted a SSE to examine their skin for skin cancer.<sup>26</sup> Individuals who reported never having conducted a SSE were asked to select 1 or more relevant reasons

from a checklist that included an “other reason” category.<sup>34</sup> Participants indicated whether they had ever received a TCE from a health professional.<sup>26</sup>

### Statistical analyses

We used a series of multivariable logistic regression analyses to examine correlates of the dichotomous outcomes of ever having done a SSE and ever having received a TCE. For each outcome, a logistic regression analysis was conducted separately for each category of correlates (sociodemographic factors, skin cancer–related factors, and psychosocial factors), with all of the variables in the category included as independent variables. The SSE and TCE benefit and barrier variables were only included in the respective regression analyses for the SSE and TCE outcomes. For all of the analyses, the data were weighted using a variable that adjusted for a number of factors, including the probability of panel selection, Spanish-language use, and potential poststratification nonresponse and noncoverage biases in both the study sample and the overall panel. Poststratification adjustment variables included age, gender, educational level, state of residence, metropolitan area, Internet access, and primary language by census region. Additional information regarding the statistical weighting is available elsewhere.<sup>35</sup> A cutoff of *P* less than .05 was used to determine statistical significance for all analyses. We conducted the analyses using software (SAS, Version 9.3, SAS Institute Inc, Cary, NC).

### RESULTS

Participants’ state of residence was as follows: California, *n* = 379; Texas, *n* = 231; Florida, *n* = 110; Arizona, *n* = 41; and New Mexico, *n* = 26. The sociodemographic characteristics of the study sample are shown in Table I. The participants were 50% female, the average age was 42 years, 15% reported having a college degree, and 71% reported being of Mexican heritage. More than a third of the participants indicated that they had no health insurance coverage. With regard to linguistic acculturation, 23% of participants were denoted as English acculturated, 32% as Spanish acculturated, and 45% as bicultural. Descriptive statistics for the skin cancer–related factors are available elsewhere.<sup>21</sup>

In terms of the skin cancer surveillance behaviors, 17.6% of participants reported ever having conducted a SSE and 9.2% indicated having received a TCE. There was a significant positive association between conducting a SSE and having a TCE ( $\chi^2 = 92.90$ , *P* < .001,  $\phi = .34$ ). Among individuals who reported having conducted a SSE, 30.9% had received a TCE compared with 4.6% among those who had not

**Table I.** Sociodemographic characteristics of study sample (N = 787)

Characteristic	Unweighted %*	Weighted %	Unweighted/weighted Mean (SD)
Female gender	50.2	49.8	
Age (y)			42.3 (15.1)/41.1 (15.0)
Educational level			
≤ Some high school	29.7	34.3	
High-school graduate	29.6	29.3	
Some college	25.4	25.0	
College graduate	15.2	11.5	
Health insurance coverage			
None	34.6	38.8	
Public	22.0	22.5	
Private	43.5	38.7	
Hispanic heritage			
Mexican	71.1	70.8	
Puerto Rican	4.4	4.6	
Cuban	4.9	5.1	
Central American	5.9	6.1	
South American	6.0	6.7	
Other	7.8	6.7	
Linguistic acculturation			
Spanish acculturated	31.7	35.7	
Bicultural	45.1	44.7	
English acculturated	23.2	19.6	

\*Based on actual sample size observed in study.

conducted a SSE. Among individuals who reported receiving a TCE, 58.6% had conducted a SSE compared with 13.4% among those who had not received a TCE. The reasons reported for never having conducted a SSE are shown in Table II. The most commonly reported reasons related to lack of awareness of the importance of doing a SSE or how to do one. More than 1 in 5 participants indicated that they had never done a SSE because they had not been told to do it by a doctor. Relatively few individuals (10%) reported that they had never done a SSE because their risk of skin cancer was low or because of it not being a priority. Very few individuals provided another reason, with the most common being not having someone who could help do a SSE.

### Multivariable logistic regression analyses examining correlates of SSE

The results of the multivariable logistic regression analyses examining correlates of SSE are shown in Table III. With regard to sociodemographic factors,

**Table II.** Reported reasons for never having done skin self-examination

Reason	Weighted %*
I didn't know I should	42.8
I never think of it	41.8
I don't know what to look for	33.5
I have never been told to do it by a doctor	21.0
My risk of skin cancer is low	10.0
It is not a priority	9.7
I don't have time	3.1
Another reason	3.0

\*Of those individuals (n = 643) who reported never having done skin self-examination.

individuals were more likely to report having done a SSE if they were older or denoted as English acculturated versus Spanish acculturated or bicultural. Gender, educational level, health insurance, and Hispanic heritage were not associated with having conducted a SSE. In terms of the skin cancer–related factors, individuals who had a greater number of melanoma risk factors, used sunscreen more often, sunbathed more frequently, or worked outside in the sun for 1 to 20 hours per week (compared with 0 hours) were more likely to report having done a SSE. Shade seeking, use of sun-protective clothing, indoor tanning, and having a sunburn in the past year were not associated with having performed a SSE. With regard to the psychosocial variables, individuals were more likely to report having done a SSE if they had greater perceived risk for skin cancer, had been recommended by a physician to check their skin for skin cancer, endorsed more SSE benefits, or had fewer SSE barriers. Skin cancer knowledge, perceived severity, and worry were not associated with having done a SSE.

### Multivariable logistic regression analyses examining correlates of TCE

The results of the multivariable logistic regression analyses examining correlates of TCE are shown in Table III. Individuals were more likely to report having had a TCE if they were older or English acculturated as opposed to Spanish acculturated or bicultural. Receipt of a TCE was not associated with gender, educational level, health insurance, or Hispanic heritage. In terms of the skin cancer–related factors, individuals who had a greater number of melanoma risk factors or had ever tanned indoors were more likely to report having had a TCE. Receipt of a TCE was not associated with sunscreen use, shade seeking, use of sun-protective clothing, sunbathing, having a sunburn in the past year, or job-related sun exposure. With regard to the

psychosocial factors, individuals were more likely to have had a TCE if they reported higher skin cancer knowledge, greater perceived severity of skin cancer, lower skin cancer worry, having received a physician recommendation to check their skin for skin cancer, or fewer TCE barriers. Perceived skin cancer risk and TCE benefits were not associated with having a TCE.

### Additional analyses

The logistic regression results indicated that Spanish-aculturated and bicultural individuals are less likely to engage in skin cancer surveillance behaviors than English-aculturated individuals. One potential explanation for this finding may relate to differences in physician recommendations received by Hispanics of varying levels of acculturation. In a post hoc analysis, we found that only 9.2% of Spanish-aculturated Hispanics reported being advised by a doctor to check their body for skin cancer, compared with 15.6% of bicultural and 17.3% of English-aculturated Hispanics ( $\chi^2 = 7.35$ ,  $P = .025$ ). When we added the physician recommendation variable to the multivariable logistic regressions with all of the sociodemographic factors included as correlates, linguistic acculturation was no longer a significant predictor of SSE ( $P = .235$ ) and its association with TCE was attenuated ( $P = .034$ ) (data not shown).

### DISCUSSION

This study examined the prevalence and correlates of skin cancer surveillance behaviors in a representative sample of Hispanic adults residing in 5 southern and western US states. The relatively low rates of ever having performed a SSE (17.6%) and having received a TCE (9.2%) are consistent with those reported in the few prior studies that focused on US Hispanics.<sup>16,19</sup> The positive association between the 2 skin cancer surveillance behaviors suggests that they may have similar underlying motives and/or be mutually reinforcing to some degree.<sup>36</sup> The primary reasons for never having done a SSE pertained to lack of awareness of the need to conduct such an examination and how to carry it out, and never thinking about SSE. Compared with non-Hispanic white individuals, Hispanics are less knowledgeable about skin cancer symptoms and risks<sup>37-39</sup> and may be less likely to seek medical care if they have a suspicious lesion.<sup>40,41</sup> These findings suggest that interventions to promote SSE among Hispanics should foster awareness of the potential risks of skin cancer and the importance of conducting SSE, provide education on how to perform a comprehensive examination, facilitate adherence to a regular SSE schedule (eg, by using

**Table III.** Correlates of skin self-examination and total cutaneous examination

	Ever conducted SSE			Ever had TCE		
	AOR	95% CI	P	AOR	95% CI	P
<b>Sociodemographic factors</b>						
Gender			.263			.815
Male	Reference			Reference		
Female	1.25	0.85-1.84		0.94	0.56-1.59	
Age (y)	1.03	1.02-1.04	<.001	1.04	1.02-1.05	<.001
Educational level	1.19	0.96-1.48	.113	1.21	0.91-1.60	.196
Health insurance coverage			.493			.384
None	Reference			Reference		
Public	1.28	0.74-2.21		0.90	0.39-2.11	
Private	1.34	0.81-2.21		1.42	0.71-2.85	
Hispanic heritage			.691			.389
Mexican	Reference			Reference		
Puerto Rican	1.21	0.53-2.72		2.40	0.98-5.88	
Cuban	1.17	0.52-2.62		1.77	0.68-4.58	
Central American	1.39	0.64-3.00		0.68	0.17-2.75	
South American	0.55	0.22-1.35		1.35	0.52-3.49	
Other	1.00	0.48-2.08		0.98	0.38-2.51	
Linguistic acculturation			.046			.004
Spanish acculturated	Reference			Reference		
Bicultural	1.17	0.71-1.94		2.12	0.96-4.68	
English acculturated	2.06	1.11-3.82		4.37	1.78-10.71	
<b>Skin cancer-related factors</b>						
No. of melanoma risk factors	1.20	1.04-1.38	.012	1.44	1.20-1.71	<.001
Sunscreen use	1.24	1.06-1.45	.008	1.21	0.98-1.49	.080
Shade seeking	1.14	0.94-1.39	.175	1.09	0.85-1.40	.486
Sun-protective clothing use	1.16	0.93-1.45	.175	0.89	0.67-1.19	.446
Sunbathing	1.32	1.05-1.65	.015	1.21	0.90-1.63	.216
Ever tanned indoors			.520			.024
No	Reference			Reference		
Yes	0.74	0.30-1.84		2.60	1.13-5.96	
Sunburn in past year			.289			.653
No	Reference			Reference		
Yes	0.79	0.50-1.23		0.88	0.51-1.53	
Job-related sun exposure, h/wk			.053			.284
0	Reference			Reference		
1-20	1.99	1.09-3.63		1.83	0.83-4.05	
>20	0.82	0.40-1.68		0.85	0.31-2.35	
<b>Psychosocial factors</b>						
Skin cancer knowledge	1.08	0.96-1.22	.183	1.22	1.04-1.45	.018
Perceived skin cancer risk	1.34	1.04-1.73	.026	0.89	0.65-1.23	.482
Perceived skin cancer severity	1.05	0.81-1.37	.714	1.91	1.24-2.94	.004
Skin cancer worry	0.89	0.71-1.11	.305	0.72	0.53-0.98	.037
Physician recommended checking for skin cancer			<.001			<.001
No	Reference			Reference		
Yes	5.39	3.24-8.98		13.46	7.24-25.04	
SSE benefits	1.32	1.07-1.62	.009			
SSE barriers	0.48	0.37-0.63	<.001			
TCE benefits				1.18	0.88-1.59	.258
TCE barriers				0.68	0.49-0.95	.024

AOR, Adjusted odds ratio; CI, confidence interval; SSE, skin self-examination; TCE, total cutaneous examination.

reminders and doing it on the same day each month), and emphasize the need to seek timely medical care for potentially suspicious moles or growths.

Identifying psychosocial correlates of skin cancer surveillance behaviors among Hispanics sheds light on the content and approach that should be used in

future interventions to promote these behaviors in this understudied population. Such interventions may most appropriately be targeted toward Hispanics at increased risk for melanoma because of their phenotypic characteristics, family history, and/or engagement in risky skin cancer–related behaviors. In the current study, 31.2% of the participants had 3 or more of the 8 melanoma risk factors we examined and 15.2% had 4 or more risk factors.

Promoting engagement in SSE may best be achieved by educating Hispanics about their risk of developing skin cancer, reinforcing the benefits of SSE, and addressing individuals' barriers to SSE. Interventions to promote TCE among Hispanics should focus on increasing knowledge about skin cancer, highlighting the potential severity and implications of being given a diagnosis of skin cancer (and melanoma in particular), pointing out the reduced worry about skin cancer that may result from having a TCE, and overcoming individuals' barriers to TCE. In addition, efforts to promote SSE and TCE should incorporate a physician recommendation, as this is a strong correlate of both behaviors. In the current study, 13.6% of the participants reported that they had received a physician recommendation to check their body for skin cancer. Among those individuals, SSE and TCE were reported by 47.3% and 58.6%, respectively, compared with rates of 12.4% and 13.4% among those who indicated that they had not received a physician recommendation. There is evidence that Hispanics are less likely than non-Hispanic whites to receive advice to perform SSE.<sup>38</sup> Hispanics may be receptive to skin cancer prevention discussions, advice, and behavioral interventions provided by their primary care providers.<sup>42</sup> There is a need to incorporate issues related to the delivery of culturally proficient skin cancer prevention in training curricula for dermatologists, primary care physicians, and other health care providers.<sup>5,43</sup> In addition, greater awareness of the risks of skin cancer among Hispanics and other racial/ethnic minorities will likely be achieved by increasing the diversity of the dermatology workforce.<sup>5,43</sup>

Consistent with our hypothesis, individuals who were denoted as English acculturated were more likely to have engaged in SSE and TCE compared with Spanish-acculturated individuals. Our use of a bidimensional assessment of linguistic acculturation enabled us to identify bicultural individuals (ie, high Spanish acculturation and high English acculturation), who were less likely to have engaged in SSE and TCE than English-acculturated individuals. Overall, the results suggest that individuals with high acculturation to the Spanish language, regardless of their level of English acculturation, are less

likely to engage in skin cancer surveillance behaviors than English-acculturated individuals. Previous research has generally shown that Spanish-acculturated Hispanics engage in more sun protection behaviors and fewer sun exposure behaviors than English-acculturated Hispanics.<sup>19,21,44–46</sup> Thus, the skin cancer surveillance and sun safety behaviors among Hispanics who are more acculturated to US norms are more similar to the prevailing behaviors found among non-Hispanic whites. With regard to the other sociodemographic factors we examined, older Hispanics were more likely to have ever engaged in SSE and TCE, which is consistent with most prior research, although several studies have found rates of SSE to be lower among older adults.<sup>17</sup> Health insurance coverage was not associated with ever having a TCE. This could in part be because of the fact that participants indicated their current insurance coverage and their TCE might have been conducted years previously or even in a different country if they did not always reside in the United States.

In terms of the skin cancer–related correlates examined in the current study, it is encouraging that Hispanics with more melanoma risk factors were more likely to have engaged in both SSE and TCE. It is also positive that individuals who reported sunbathing more often were more likely to have engaged in SSE and indoor tanners were more likely to have received a TCE. Future research is needed to understand why these skin cancer risk behaviors were differentially associated with SSE and TCE. Individuals with job-related sun exposure (of 1–20 h/wk) were more likely to have engaged in SSE than those without such exposure. Overall, however, the results provide little indication that Hispanics' engagement in sun protection and sun exposure behaviors are systematically associated with their skin cancer surveillance behaviors. Thus, health care providers should be aware that Hispanic individuals' level of engagement in a specific sun safety or early detection behavior may not provide a good indication of their engagement in other such behaviors. Comprehensive skin cancer prevention programs targeting Hispanics should address the importance of engaging in an array of sun safety and skin surveillance behaviors.

There are numerous strengths of the study, including the large sample size, the probability-based sampling approach, the use of English- and Spanish-language questionnaires, the focus on both SSE and TCE, and the theory-driven approach used to select a comprehensive set of potential correlates of the skin cancer surveillance behaviors. However, there are also several limitations to the study. Because of the

cross-sectional study design, the causal nature of the observed associations cannot be determined. The 46.6% study acceptance rate raises the possibility of sampling bias, although this is mitigated by our use of statistical weighting to control for such bias. In addition, the extent to which the study results can be extrapolated to US Hispanics residing in states other than those examined in the current study is unclear. Although it is possible that the prevalence of skin cancer surveillance behaviors among Hispanics may differ across geographic regions in the United States, it seems less likely that such differences would occur with regard to the correlates of these behaviors.

In summary, this study identified a low prevalence of skin cancer surveillance behaviors among US Hispanic adults residing in 5 southern and western states. We identified several Hispanic subpopulations that have especially low rates of engaging in skin cancer surveillance behaviors (eg, younger individuals and those with high Spanish linguistic acculturation). The study results also provide insight on the most appropriate content and approach that should be used to promote skin cancer surveillance behaviors among at-risk Hispanic individuals. Future research is needed to develop and test such interventions.

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