Adoption of Western Culture by Californian Asian Americans

Attitudes and Practices Promoting Sun Exposure

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Objective: To investigate whether the adoption of Western culture is associated with attitudes and practices promoting sun exposure among Asian Americans.


Setting: Primarily northern California community groups via online survey.

Participants: Adult volunteers who self-identified as Asian American.

Main Outcome Measures: Results based on 546 questionnaires returned.

Results: The overall response rate was 74.4%. Multivariate regression analysis controlling for age and skin type showed that westernization (as determined by generation in the United States, location raised, or self-rated acculturation) was associated with attitudes and behaviors promoting sun exposure (including the belief that having a tan is attractive, negative attitudes toward use of sunscreen and sun protective clothing, and increased weekend sun exposure, lying out to get a tan, and tanning bed use) at a level of \( P < .05 \).

Conclusions: Our data suggest that adoption of Western culture may be associated with attitudes and behaviors promoting sun exposure among Asian Americans. This group should be targeted by dermatologists for increased education regarding sun protection, solar damage, and skin cancer prevention and detection.

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Recent studies \(^1-^8\) have shown that the diagnosis of skin cancer in persons of Asian descent may be delayed, leading to more advanced presentation and worse prognosis than in white persons, in part because of a lowered index of suspicion among physicians and patients. A factor leading to this lowered index of suspicion may be that skin cancer affects individuals of Asian descent at a lower rate compared with white individuals. \(^1,^4,^5,^9-^11\)

However, the incidence of nonmelanoma and melanoma skin cancers may be increasing among individuals of Asian descent. The incidence of basal cell skin cancer among Asian residents of Singapore increased at a rate of 2% to 8% annually from 1968 to 1997. \(^12\) In Japan, the incidence of superficial spreading melanoma has increased from 12.3% in 1975-1986 to 17.5% in 1987-1996, and is thought to reflect the recent westernization of the Japanese lifestyle. \(^6,^7\) In the medical literature, numerous published studies \(^13,^19\) among Asians report an association between acculturation to a Western diet and increased risk of cardiovascular disease, type 2 diabetes mellitus, and breast cancer. The health consequences of adopting a Western lifestyle are not likely to be limited to dietary changes alone. Although it is difficult to directly compare dietary changes and consequent disease with sun exposure patterns and subsequent skin disease, we mention this as an intriguing potential parallel process because both involve westernization. Although a racial/ethnic study \(^19\) of Japanese living in Hawaii reports development of basal cell skin cancers at a rate twice that of Japanese living in Japan, it is unclear whether this is due to geographic differences in UV exposure or adoption of Western culture. To our knowledge, there are no reports in the medical literature about whether adoption of Western culture per se might increase the risk of sun exposure with its consequent photodamage and skin cancer among Asian Americans, who comprise a significant portion of the California population (12.4%, or 4.5 million people in 2007) and are growing as a minority group. Our study explores whether this association might exist.
### Study Population and Survey Methods

Following Stanford Institutional Review Board approval, we performed a voluntary anonymous survey study from November 28, 2007, to January 28, 2008 (eFigure; http://www.archdermatol.com). The 41 survey items were generated using validated acculturation scales (modified Sunn-Lew Asian Self-Identity Acculturation Scale) and previously published sun exposure, protection, and skin cancer survey instruments. Because of the heterogeneity of languages within the Asian population in northern California, the survey was conducted in English only. To minimize bias toward Asian Americans with access to health care, this study was conducted primarily online. The survey was placed online via the Stanford University Surveyor Web site, and the Web site address was given to the leaders of northern California community groups that were likely to contain a large proportion of Asian Americans. The leaders voluntarily forwarded the Internet address of the survey to their members. In addition, a paper form of the survey was given to all patients who attended the Stanford Adult General Dermatology Clinic to see a single dermatologist and who self-identified as Asian American.

### Data Analysis

The estimated response rate was calculated using the number of responses divided by the number of clicks (hits) recorded by the webmaster for this Web site. Results were tabulated using commercially available software (Microsoft Office Excel 2007; Microsoft, Redmond, Washington). Statistical analysis (including analysis of variance, Kendall rank correlation, multivariate regression, and χ², t, and t tests) was performed using statistical software (SPSS version 16.0; SPSS Inc, Chicago, Illinois). The determinants of acculturation were generated (eg, first, second, or greater in the United States), location raised (eg, exclusively or mostly in Asia, equally in the United States and Asia, or exclusively or mostly in the United States), and self-rated acculturation (eg, mostly or very Western, bicultural, or mostly or very Asian). The choice of “unknown” was offered as well for the category of generation, and these respondents were excluded from the analysis. Because age and skin type (as determined by responses to questions regarding tanning ability and ease of burning) were not matched within the categories of generation, location raised, or self-rated acculturation, multivariate regression analysis was performed to control for these 2 variables. To perform multivariate logistic regression analysis, these data were binomialized. We chose the 2 categories to highlight differences between those who were primarily raised in Asia (“only or mostly in Asia”) vs all other categories and those who rated their acculturation as primarily Asian (“very or more Asian”) vs all other categories.

### Results

There were 546 respondents. Ninety-eight percent of the surveys were returned online; only 2.0% of surveys were returned on paper through the dermatology clinic. The overall response rate for the Internet respondents and the dermatology clinic patients was 74.4%. Inspection of Internet protocol (IP) addresses of respondents indicated that more than 95% of IP addresses were located in northern California. The second most frequent IP address location was southern California.

Of those who returned surveys, 57.3% self-identified as being of Chinese or Taiwanese descent, 8.2% as Korean, 6.0% as Japanese, and 12.0% as mixed Asian descent. The remaining 16.5% consisted of the following: Indian (4.6%), Filipino (4.4%), Vietnamese (4.2%), Indonesian (0.7%), Singaporean (0.6%), Thai (0.6%), Cambodian (0.6%), Hmong (0.4%), Pacific Islander (0.2%), Pakistani (0.2%), Bangladeshi (0.2%), Bengali (0.2%), and Sri Lankan (0.2%).

The basic demographics of the respondents are given in Table 1. The mean (SD) ages, sex ratios, and skin types for the respondents overall and for the subgroups based on determinants of acculturation are given.

### Table 1. Basic Demographics and Skin Sensitivity to Sun (to Assess Skin Type) Among Asian American Survey Respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall (N=548)</th>
<th>1st (n=234)</th>
<th>≥2nd (n=312)</th>
<th>P Value</th>
<th>1st (n=27)</th>
<th>≥2nd (n=423)</th>
<th>P Value</th>
<th>1st (n=129)</th>
<th>≥2nd (n=309)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD), y</td>
<td>34 (16)</td>
<td>40.0 (16)</td>
<td>29.9 (9)</td>
<td>&lt;.001</td>
<td>16 (18)</td>
<td>36.7 (16)</td>
<td>31 (10)</td>
<td>&lt;.001</td>
<td>37 (15)</td>
<td>36.4 (15)</td>
</tr>
<tr>
<td>Sex, %</td>
<td>Female</td>
<td>387 (67)</td>
<td>157 (67.1)</td>
<td>208 (66.7)</td>
<td>.92</td>
<td>72 (73.5)</td>
<td>14 (51.9)</td>
<td>281 (66.4)</td>
<td>.18</td>
<td>87 (67.4)</td>
</tr>
<tr>
<td>Male</td>
<td>151 (33)</td>
<td>77 (32.9)</td>
<td>104 (33.5)</td>
<td></td>
<td></td>
<td>26 (26.5)</td>
<td>13 (48.1)</td>
<td>142 (33.6)</td>
<td></td>
<td>42 (32.6)</td>
</tr>
</tbody>
</table>

### References

CORRELATIONS WITH ATTITUDES AND BEHAVIORS

Correlations between acculturation to Western values and sun exposure attitudes and behaviors were subjected to Kendall τ rank correlation (2 tailed) to determine statistical significance. Statistically significant correlations at P < .05 are boldfaced in Table 2.

Because of confounding by age and skin type, we performed multivariate regression analysis to control for these factors. Table 3 gives the results of our multivariate regression analysis on the statistically significant associations obtained using Kendall τ rank correlation. Generation, location raised, and self-rated acculturation were significantly associated with the attitude that a tan is attractive (P < .001 for all), generation and location raised with the attitude that sunscreen is too much work to put on (P = .005 for both), and location raised and self-rated acculturation with the attitude that wearing sun protective clothing is more important than looking fashionable (P = .008, respectively). Generation alone was statistically significant for time spent in the sun on a typical weekend (P = .009), self-rated acculturation with lying out in the sunlight (P = .003), and location raised and self-reported acculturation with prior tanning bed use (P = .03 and P = .02, respectively).

Other correlations in our study were consistent with these findings. For instance, belief that lighter skin is more desirable was associated with less westernization, specifically the older generation and location raised in Asia or mostly Asia (P < .001 for both by Kendall τ rank correlation and P < .001 for both by multivariate regression analysis controlling for age and skin type). Topical whitener use was associated with less westernization, specifically self-rated acculturation as Asian or mostly Asian (P = .01 by Kendall τ rank correlation and P = .04 by subsequent multivariate regression analysis controlling for age and skin type).

Finally, among more westernized Asian Americans, the practice of deliberate sunbathing was widespread. Sixty percent of second-generation or greater Asian Americans reported a history of laying out in the sun (vs 47.0% of first-generation respondents). This rate was 59.1% for those raised equally, mostly or exclusively in the United States (vs 33.7% for those raised in Asia or mostly Asia). This rate was 58.0% among those who rated themselves as bicultural or more westernized (vs 43.6% of those self-identifying as more Asian).

Although it has generally been accepted as conventional wisdom that Asian cultures prize lighter skin tones24-26 and that Western cultures value a “healthy”...
tanned appearance. To our knowledge, our study is the first to explore what happens to attitudes and practices of sun exposure when Asians adopt Western culture. Specifically, the adoption of Western culture seems to increase sun exposure, implying negative consequences to skin health.

Asian American patients and their physicians may derive a false sense of security regarding the effect of sun exposure on solar damage and skin cancer for the following 2 reasons: (1) Asian Americans as a group are more pigmented than white Americans and (2) the most common form of melanoma among Asian Americans is the acral lentiginous type, which is not located on sun-exposed skin. If Asian Americans believe that they are protected from the effects of solar and UV radiation exposure compared with their white counterparts, they may also be less likely to self-examine for skin lesions or to seek the assistance of dermatologists for skin cancer screening.

The rate of deliberate sunbathing among more westernized Asian Americans seems to approach that of whites in the United States. It would be informative to compare the rates of sunbathing and tanning bed use in our study with those found in Asian countries, as no published statistics on these activities were found in the English-language medical literature.

Asian race is heterogeneous, and we cannot assume that each subgroup has the same attitudes and behaviors toward sun exposure, protection, and skin cancer awareness. In a study with more respondents, it may be possible to determine if differences exist among the various racial subgroups of Asian Americans.

There are several study limitations. A potential confounder is the possibility of lifestyle differences between generations. For instance, we did not assess whether there were variations in the number of outdoor work hours among generations.

To minimize bias toward Asian Americans with access to health care, this study was conducted primarily online. The original design of the study included surveying Asian Americans visiting a single dermatology clinic; however, this was curtailed early in the study to minimize bias toward respondents with access to health care. Because most surveys were returned online, these data are biased in favor of those with computer literacy and Internet access.

This study relied on self-reported data, which is prone to recall and sampling bias. Our study was limited to Asian Americans living in California, which reduces generalizability to all Asian Americans living in the United States. Because of the heterogeneity of Asian American languages, our survey was conducted in English only. This could have led to an underestimate or an overestimate of the correlation between westernization and sun exposure attitudes and practices. For instance, if we assume that lack of English literacy is associated with less westernization and that less westernization is associated with more sun protective attitudes and behaviors, then our study results would be an underestimate of the true correlation. Finally, another source of sampling bias may be that those who are more concerned about skin health may have been more likely to fill out the survey.

In conclusion, our data suggest that the adoption of Western culture by Asian Americans in California may be associated with attitudes and behaviors promoting sun exposure. In light of recent evidence pointing to the increasing incidence of skin cancers among Asian populations, as well as delays in diagnosis of skin cancer in part because of a lowered index of suspicion by health care providers and by Asian Americans, dermatologists and other health care providers in the United States should increase their education efforts about sun exposure, sun protection, and skin cancer targeted at this growing minority group.

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Author Contributions: All authors had full access to all of the data in this study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Gorell, Lee, Muñoz, and Chang. Acquisition of data: Gorell, Lee, Muñoz, and Chang. Analysis and interpretation of data: Gorell, Lee, Muñoz, and Chang. Drafting of the manuscript: Gorell, Lee, Muñoz, and Chang. Critical revision of the manuscript for important intellectual content: Gorell, Lee, Muñoz, and Chang. Statistical analysis: Gorell, Muñoz, and Chang. Administrative, technical, or material support: Gorell, Lee, Muñoz, and Chang. Study supervision: Chang.

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Additional Information: The eFigure is available at http://www.archdermatol.com.


REFERENCES