Skin Cancer Knowledge, Attitudes, and Behaviors in the Salon

A Survey of Working Hair Professionals in Houston, Texas

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Objective: To determine factors related to the observation of suspicious lesions on the scalp, neck, and face of customers by hair professionals (cosmetologists and barbers).

Design: Survey of hair professionals in January 2010.

Setting: Single hair professional educational conference.

Participants: Hair professionals from a chain of 17 salons in the greater Houston, Texas, area.

Main Outcome Measure: Frequency with which hair professionals looked for lesions on their customers’ scalp, neck, and face during the previous month.

Results: Of 304 surveys distributed to hair professionals, 203 were completed (66.8% response rate). Few hair professionals had received formal skin cancer education (28.1%). Forty-nine percent of hair professionals were “very” or “extremely” interested in participating in a skin cancer education program. Of responding participants, 37.1% looked at more than 50% of their customers’ scalps, 28.8% looked at more than 50% of their customers’ necks, and 15.3% looked at more than 50% of their customers’ faces for suspicious lesions during the preceding month. Frequency of observation of customers’ lesions was associated with hair professionals’ self-reported health communication practices (P < .001) and personal skin protection practices (P = .05) but was not associated with hair professionals’ skin cancer knowledge (P = .48).

Conclusions: This study suggests that hair professionals are looking for suspicious lesions on customers’ scalp, neck, and face and are acting as lay skin cancer educators. These results provide evidence that hair professionals would be receptive to skin cancer education and that further investigation into the role of hair professionals in skin cancer prevention and detection campaigns is needed.

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MELANOMA AND NON-MELANOMA SKIN CANCER ON THE SCALP, NECK, AND FACE

Melanoma and nonmelanoma skin cancer on the scalp, neck, and face significantly contributes to the morbidity and mortality of skin cancer in the United States. Melanoma of the scalp and neck represented 6% of all melanomas and accounted for 10% of all melanoma deaths in the United States from 1973 to 2003, with a 5-year survival probability of 83.1% for stage I melanoma of the scalp and neck compared with 92.1% for stage I melanoma of other sites. These findings are consistent with the results of several previous studies. The relatively high fatality rate of melanoma of the scalp and neck is likely related to the difficulty of finding suspicious lesions during self-examinations by patients and routine examinations by physicians. Squamous cell carcinomas, and basal cell carcinomas to a lesser extent, have been found to be directly related to lifetime UV exposure, and up to 80% of these cancers occur on highly sun-exposed areas such as the scalp, neck, and face. The mortality rate for nonmelanoma skin cancer is fairly low; however, nonmelanoma skin cancer of the scalp, neck, and face can cause significant morbidity because of cosmetic and functional consequences of the disease.

See Practice Gaps at the end of article

Hair professionals (cosmetologists and barbers) are in a unique position to detect skin cancers on the scalp, neck, and face because they routinely look at this area during a customer visit. In addition, they typically see their customers on a regular basis and frequently discuss health-related topics, such as health and illness, diet, and medical care, with their customers. These unique characteristics make them ideal can-
METHODS

SURVEY ADMINISTRATION

In January 2010, we surveyed hair professionals from 17 salons in a single salon chain in the greater Houston, Texas, area. We distributed the 43-item instrument to all attending professionals at the chain’s quarterly educational conference. This chain was chosen because it serves economically and geographically diverse areas in the greater Houston area and serves both male and female clientele. On the basis of zip code locations of the salons and US 2000 Census information, the average median household income in the zip codes of these salons was $54,901, compared with $40,443 for the Houston area overall. The average percentage of individuals below the poverty level in the salon zip codes was 11.1%, compared with 19.2% for the Houston area overall. The minimum price of a haircut at these salons ranged from $25 to $30. Survey participation was anonymous, and the study was approved by the institutional review board of the Harvard School of Public Health under exempt status.

SURVEY INSTRUMENT

The survey instrument was adapted from surveys used in previous studies of predictors of skin self-examination and professional full-body skin examination. It was further refined by the study investigators and pilot tested among a sample of 25 hair professional educators from the salon chain to assess clarity, readability, relevance, and time required to complete the survey. The survey instrument is available from study investigators on request.

STATISTICAL ANALYSIS

Hair professionals were asked to report the frequency with which they observed their customers’ scalp, neck, and face for abnormal moles during the previous month (categorized as none, <25%, 25%-50%, 51%-75%, or >75% for each of the 3 anatomic sites). These 3 five-point ordinal scales were summed to create an index score ranging from 3 (never checked any site) to 15 (checked all 3 sites more than 75% of the time) and divided into tertiles. Independent predictors included the following: (1) customer demographic characteristics, (2) participant demographic characteristics, (3) applied skin cancer knowledge, (4) personal skin protection practices, (5) skin cancer attitudes, and (6) health communication practices.

Descriptive statistics were used to report on participant and customer demographic characteristics. The proportion of participants who reported a positive (skin protective) response for each predictor survey item was computed within each tertile. Independent predictors included the following: (1) customer demographic characteristics, (2) participant demographic characteristics, (3) applied skin cancer knowledge, (4) personal skin protection practices, (5) skin cancer attitudes, and (6) health communication practices.

Descriptive statistics were used to report on participant and customer demographic characteristics. The proportion of participants who reported a positive (skin protective) response for each predictor survey item was computed within each tertile of customer screening. A χ² trend test was used to evaluate the relationship between the desired skin protective response and the frequency of customer screening. A type I error of .05 with a 2-sided test was considered statistically significant. The expected predictor items were then used in exploratory factor analysis to determine the independent factors measured by the instrument based on scree test analysis, proportion of variance accounted for (>10%), and interpretability criteria. Each factor was tested for internal consistency reliability using the Cronbach α coefficient. All factors with a Cronbach α greater than 0.70 were used in further analysis, and factors with an α greater than 0.60 were used with sensitivity analysis. A score was computed for each factor using all variables that contributed greater than 10% of variance to the factor with coefficients generated from the factor analysis.

Four independent factors were identified. These factors were interpreted as measuring applied skin cancer knowledge (4 items based on recognition of bleeding, itching, color change, and size change with regard to mole signs), personal skin practices (2 items based on hat and sunscreen use), skin cancer attitudes (3 items based on confidence in looking at moles, knowledge of the asymmetry-border-color-diameter rule [often called the ABCD rule], and knowledge of the difference between melanoma and benign growths), and health communication practices (2 items based on comfort sharing health information from “not at all” to “extremely” and on frequency with which health-related topics are discussed in the salon from “never” to “always”). Applied skin cancer knowledge (α=0.86) and health communication practices (α=0.74) had sufficient reliability to be used in the analysis. Personal skin practices had borderline reliability (α=0.63), and this factor was used with additional sensitivity analyses. Ordered logistic regression was used to evaluate the independent predictive value of each of these factor scores on likelihood of customer observation, categorized by tertiles. Participant age, sex, and number of years working were used as covariates in the model based on the expected relationship with the predictor and outcome variables. Participant age and participant years working were found to be highly collinear, and only participant age was used in the model because it provided more information. Participant race/ethnicity was not significantly associated with the factor scores or with the customer screening outcome and was not included in the model. Age was treated as an interval-scaled variable using midpoint scores. Appropriate variable definitions were determined on the basis of likelihood ratio testing. All analyses were performed using SAS statistical software, version 9.2 (SAS Institute, Inc, Cary, North Carolina).

RESULTS

Of 304 professionals at the conference, 203 completed the survey (66.8% response rate) (Table 1). Based on estimates provided by the salon chain’s management, 25.0% of the total sample population was at least 36 years old, compared with 37.4% of study participants. Fifteen percent of the total sample population was white, compared with 25.1% of study participants. Hispanic professionals constituted 50.7% of the study participants. Ten percent of the total sample population was male, compared with 10.3% of study participants.

The percentage of participants who reported that greater than 50% of their customers were white was 68.4%. The percentage of participants who reported that greater than 50% of their customers were male was 15.2%, and 13.3% reported that greater than 50% of their customers were older than 50 years. Eighty-six percent of participating hair professionals spent at least 20 minutes with each customer.

SALON ENVIRONMENT

Sixty-nine percent of participants reported being “somewhat” or “very likely” to give customers a skin cancer
information pamphlet during an appointment, and 49.0% of hair professionals were “very” or “extremely” interested in participating in a skin cancer education program. Twenty-five percent of hair professionals share general health information with customers “often” or “always.”

**KNOWLEDGE AND BEHAVIORS**

Participants had fairly limited previous exposure to skin cancer education. Most participants had not received a course on skin cancer (138 [71.9%]), but a modest number were educating their customers and observing for suspect lesions. With regard to looking for abnormal moles during the preceding month, 73 participants (37.1%) reported looking at more than 50% of their customers’ scalps, 56 (28.8%) reported looking at more than 50% of their customers’ necks, and 30 (15.3%) reported looking at more than 50% of their customers’ faces (Figure). Fifty-eight percent of participants reported recommending at least once that a customer see a health professional for an abnormal mole. Report of past recommendation was highly associated with higher frequency of customer observation (P<.001, $\chi^2$ test for trend).

Many participants demonstrated an understanding of basic skin cancer knowledge. Ninety percent of participants agreed or strongly agreed that a customer should see a health professional for a mole that is changing in size, and 89.6% similarly agreed or strongly agreed for a mole that frequently bleeds. Seventy-eight percent of participants agreed or strongly agreed that a customer should see a health professional for a mole that frequently itches, and 88.5% agreed or strongly agreed for a mole that is changing in color.

There was not a statistically significant relationship between participants’ awareness of any of these signs of a concerning mole and frequency of customer observation (Table 2). However, participants who reported knowing the ABCD rule for melanoma were more likely to look at customers’ skin. Understanding the difference between melanoma and ordinary skin growths and disagreeing that skin cancer was more difficult to detect than other types of cancer was also associated with a higher likelihood of customer observation.

Attitudes toward skin cancer and some personal practices were significant predictors of customer observation (Table 3). Hair professionals who were confident looking at their own moles were more likely to look at their customers’ skin, and participants who had a personal history of skin cancer or who knew someone who has had skin cancer were also more likely to look at their customers’ skin. Increased personal sunscreen use was associated with increased customer observation, whereas increased hat use was not. Frequent skin self-examination and report of previous professional full-body skin examination were also associated with higher frequency of customer observation.

Professional health communication practices (both increased comfort discussing health information and increased frequency of health-related discussions in the salon) were strongly significant predictors of frequency of customer observation.
In the salon. A hair professional's direct observation of customers' skin without verbal communication has been shown to positively influence skin self-examination.16-19 One hundred fifty-nine surveys contained no missing data for the predictor variables and outcome variables of interest and were used in the regression modeling. In the analysis of the independent predictive value of each factor, personal skin protection practices and health communication practices were significant predictors of frequency of customer lesion observation, whereas applied skin cancer knowledge was not (Table 4). The relationship between health communication practices score and applied knowledge score and the likelihood of customer observation was similar when personal skin protection practices was not included in the analysis. The strong relationship between health communication practices score and the likelihood of customer observation was consistent with the trend test results (Table 3).

Our survey results indicated that 37.1% of hair professionals were looking for lesions on more than 50% of customers' scalps, whereas only 15.3% of participants were looking for lesions on more than 50% of customers' faces. Hair professionals have a more natural view of the back of the head and the neck than they do the face during a salon visit. As a result, they may be more aware of skin on the scalp and posterior neck than the face. In addition, because hair professionals are trained in cosmetology school about skin as it relates to the hair, they may feel more comfortable evaluating the skin around and below the hairline than the skin on the face.

Skin cancer knowledge was not a significant predictor of observation behaviors. The limited effect is likely related to the high level of skin cancer knowledge in the study population. Previous studies examining predictors of skin self-examination have shown varying effects of skin cancer knowledge on the likelihood of self-screening. Studies such as ours, in which most participants were aware of the main warning signs of skin cancer, have found that skin cancer knowledge did not have a significant effect on the likelihood of skin self-examination.10-19

Although the skin cancer knowledge score was not a significant predictor, several individual knowledge questions were significant predictors when analyzed independently. This observed effect may be because these questions measured attitudes toward skin cancer rather than knowledge. Confidence in one's ability to recognize an
abnormal mole and a personal, family, or friend’s history of skin cancer were significantly associated with the frequency of customer observation. These results are consistent with previous studies of predictors of skin self-examination and are likely related to an increased comfort applying knowledge about skin cancer detection and an increased awareness about skin cancer and its health effects.

Personal skin protection practices were highly predictive of frequent customer observation. Likely, participants who were more diligent about personal skin protection had a heightened awareness about skin cancer and sun protection that led to more skin protective behaviors in both their personal and professional practices.

In both the χ² analysis and the overall predictive model, comfort sharing health information and frequency of discussion of health information in the salon were highly predictive of frequency of customer skin observation. Although study participants had similar skin cancer knowledge, the health communication practices varied greatly among participants, and those who were more comfortable discussing general health information and who discussed it more frequently were much more likely to look for suspicious lesions on their customers’ skin. Participants who are more comfortable with health information may be more likely to apply this information in their personal and professional lives. Also, participants who are willing to discuss skin cancer with their customers if they see a suspicious lesion may be more likely to look because they are comfortable taking the next steps in customer counseling. A previous study looking at the relationship between health communication practices and skin self-examination among siblings of patients with melanoma found a similar effect.

**IMPLICATIONS**

A skin cancer education program targeting hair professionals has the potential to increase the early detection of skin cancers on high-risk anatomic areas among individuals who are unaware of their suspicious lesions. Hair professionals have a natural view of the scalp, neck, and face; spend an extended period with each customer; and often act as a source of advice and information on health-related issues. In addition, hairdressers and barbers can reach demographic groups that have poorer skin cancer outcomes and are less likely to see a physician for regular screening, including men and individuals from lower socioeconomic groups. Hairdressers and barbers have been previously recruited in similar breast cancer and prostate cancer awareness programs with encouraging results.

The results of this survey, although promising, reveal many missed opportunities because only 15.3% of hair professionals reported looking at more than 50% of their customers’ faces for lesions. The investigators of this
study are currently conducting a prospective study to examine the effects of a 20-minute education session about skin cancer and the role that hair professionals can play in its early detection and prevention. This session is supplemented by pamphlets and customer information cards designed to facilitate the discussion of skin cancer information in the salon. These tools are expected to improve the frequency of customer mole observation and customer recommendation.

Through a skin cancer education program, we hope to increase hair professionals’ awareness about skin cancers on the scalp, neck, and face; to increase their ability to identify these lesions; and to promote the discussion of skin cancer and skin protection in the salon. Any concerning lesions found by a hair professional should be evaluated by the customer’s dermatologist or by the primary care provider if the customer does not have a regular dermatologist. We would anticipate a modest increase in the number of patient visits to a dermatologist or primary care provider as a result of the program, as seen in previous community education programs, and it will be important to assess the number of visits to health professionals that occur in pilot studies. It will also be important to assess the sensitivity and specificity of lesion identification by hair professionals. We would anticipate a modest to high increase in the number of false-positive lesions when hair professionals begin looking carefully for suspicious lesions, which should be tracked in pilot studies. Because there is no precedent for assumption of legal risk for nonmedical lay professionals, we do not expect that participating hair professionals would assume any medicolegal risk for their participation.

One major challenge will be finding appropriate trainers to disseminate this information. Our hope is that this program will be part of a larger goal to develop a core of expertly trained lay community workers to look at areas of the skin that are hard to see by individuals, their family members, or their physician. This group could include massage therapists, aestheticians, nail technicians, and other professionals who have the opportunity to look closely at individuals’ skin. For hair professionals, proposed content includes 3 components: information on skin cancer identification, information on and peer-based discussion of the role of hair professionals as lay health educators, and information on skin protection practices. Educators may be from the public health community, dermatologic community, and skin cancer advocacy community and may use a standardized curriculum based on current dermatologic expertise. To develop this core of educators, one possibility would be to develop a peer health advisor model. This model has been used successfully in other cancer screening and health promotion campaigns and provides an opportunity for hair professionals to develop a sense of program ownership. Use of peer leaders would also improve the long-term sustainability of the program, with opportunities for continuing education of these leaders by local or state-level organizations, such as regional dermatologic societies.

**LIMITATIONS**

There are several limitations to this study. The study uses a cross-sectional design and does not provide longitudinal data to draw any conclusions about causality. Although it is likely that skin cancer knowledge, skin protection practices, and health communication practices lead to changes in skin cancer observation practices, many of these practices can be enhanced after observation of suspect lesions. In addition, although the survey instrument is derived from questions used in many other settings, it has not been validated with hair professionals. Although the response rate was high, 33.2% of hair professionals did not complete the survey. Compared with the total sample population, study participants were older and more likely to be white. Previous studies have found that age has a significant effect on the likelihood of skin protective behaviors, and the results of this study may overestimate or underestimate the frequency of participating hair professionals’ behaviors. There are likely unmeasured predictors of screening behaviors in this study. In particular, the skin cancer attitudes factor score could not be used in the regression model because of low reliability, and this measure could have a significant predictive effect on screening. This study represents a preliminary estimation of current practices; further studies with validated mea-

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**Table 4. Relationship Between Health Communication Practices, Personal Skin Protection Practices, and Applied Skin Cancer Knowledge and the Likelihood of Customer Lesion Observation**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health communication practices, based on results to questions on frequency of discussion of health information and comfort sharing health information with customers</td>
<td>5.19 (2.63-10.24)</td>
<td>4.75 (2.39-9.46)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Personal skin protection practices, based on results to questions on personal sunscreen use and hat use</td>
<td>1.85 (1.01-3.42)</td>
<td>1.88 (1.01-3.50)</td>
<td>.05</td>
</tr>
<tr>
<td>Applied skin cancer knowledge, based on results to questions on appropriate recommendations for color change, size change, frequent itching, and frequent bleeding</td>
<td>0.83 (0.57-1.21)</td>
<td>0.87 (0.59-1.28)</td>
<td>.48</td>
</tr>
</tbody>
</table>

Abbreviations: CI, confidence interval; OR, odds ratio.

a Odds ratio of being in the next highest tertile of customer observation (highest tertile vs middle tertile, middle tertile vs lowest tertile) per 1-unit increase in factor score.

b Adjusting for participant sex, participant age, skin cancer knowledge score, and personal skin protection practice score.

c Adjusting for participant sex, participant age, skin cancer knowledge score, and personal skin protection practice score.

d Adjusting for participant sex, participant age, personal skin protection practice score, and health communication practice score.
ures should be used to better estimate the prevalence of skin cancer screening within the salon. Finally, the sample used in this study was from a single chain of salons in a single city in the United States, which limits the generalizability of this study. Further investigation looking at a more heterogeneous population should be pursued to determine whether the results of this study are the same in other study populations. Despite its limitations, this study is a valuable snapshot of current skin cancer behaviors among working hair professionals with varying levels of experience and lays the groundwork for the development of further studies.

In conclusion, this study provides evidence that hair professionals are currently acting as lay health advisors for skin cancer detection and prevention and are willing to become more involved in skin cancer education in the salon. As professionals who have a natural view of difficult-to-see areas and who develop a close rapport with their customers, hair professionals are ideally suited to this role. In addition, through the many active professional education venues within the hair industry, the infrastructure exists to educate them. Future research should focus on creating a program that provides hair professionals with expert training and effective health communication tools to become confident and skilled lay skin cancer educators.

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Author Contributions: Dr Bailey and Mr Geller had full access to all the data in the study and take responsibility for the integrity of the data and accuracy of the data analysis. Study concept and design: Bailey, Marghoob, White, and Geller. Acquisition of data: Bailey and White. Analysis and interpretation of data: Bailey, Marghoob, Orengo, Testa, and Geller. Drafting of the manuscript: Bailey and Geller. Critical revision of the manuscript for important intellectual content: Bailey, Marghoob, Orengo, Testa, White, and Geller. Statistical analysis: Bailey, Testa, and Geller. Administrative, technical, and material support: Marghoob, White, and Geller. Study supervision: Orengo, Testa, and Geller.

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REFERENCES