

# Psychosocial Factors Associated With Skin Self-Exam Performance

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**Abstract. Objective:** The authors examined psychosocial factors associated with skin self-exam (SSE) performance by young adults. **Participants and Methods:** The authors administered surveys to 218 US college students (aged 18–26 years) attending a large midwestern university. **Results:** Contrary to prior research, men (44%) and women (49%) were relatively similar in the frequency with which they performed at least 1 SSE in the previous year. In addition, neither gender was particularly diligent at checking all 6 areas of the body (ie, arms or hands, front torso, head or neck, legs or feet, back torso, and sides or armpits); they especially overlooked body areas identified by dermatologists as high risk. For men, a behavioral belief (do not think about performing) and a normative belief (descriptive norm) significantly predicted SSE performance. For women, 2 behavioral beliefs (do not think about performing, do not know what to look for), a normative belief (descriptive norm), and bodily discomfort (uncomfortable looking at body) significantly predicted SSE performance. **Conclusions:** SSE campaigns should target awareness, symptoms to look for, descriptive norms, and bodily discomfort. In addition, health communicators should encourage men and women to more thoroughly examine high-risk areas of their bodies, which are routinely overlooked.

**Keywords:** college health, community health, gender, health education

Incidence rates for most cancers have declined since the early 1990s; however, the incidence of skin cancer continues to rise. Skin cancer is already the most common type of cancer; thus, the increasing incidence rates make skin cancer an even greater public health threat. At present, an estimated 1 in 5 Americans will develop a form of skin cancer in their lifetime.<sup>1</sup>

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Fortunately, mortality rates are low when skin cancer is detected early,<sup>2</sup> but how to detect skin cancer early remains an issue of debate.<sup>3</sup> Although somewhat controversial, skin self-exams (SSEs) are still considered the most cost-effective method.<sup>2</sup> According to the American Academy of Dermatologists, SSEs should be performed regularly (eg, once every 3 months) and consist of looking over the entire body to check for potentially cancerous moles, freckles, changes in skin color, or other abnormalities.<sup>4</sup> SSEs are generally considered simple and efficient,<sup>2</sup> yet several researchers have shown that they are still not commonplace.<sup>5–8</sup>

In addition, some groups need to be targeted more than others. As is often the case with health behaviors, young people are less likely to perform SSEs.<sup>5,6</sup> For example, Arnold and DeJong<sup>5</sup> found that only one-third of US college students had ever performed an SSE and that even practitioners typically failed to check most areas of these patients' bodies. The most commonly cited reasons for not performing SSEs were "don't know what to look for" (55.9%), "never think of it" (54.3%), "didn't know I should" (33.1%), "not a priority" (13.4%), "my risk is low" (10.2%), and "don't have time" (6.3%).<sup>5(p271)</sup>

Students who had performed SSEs were more likely to have visited a dermatologist because of a mole, to have encountered media reports of skin cancer, and to be Caucasian and female.<sup>5</sup> This third item (skin color) is likely related to increased risk; the first (dermatology visit) and second (cancer media) are likely related to increased information; but the last (being female) seems explainable only because it is typical. That is, men are typically less likely than women to perform a variety of health behaviors.<sup>9</sup> The difference is not marginal; for instance, Arnold and DeJong<sup>5</sup> found that 49% of women compared with 17% of men had practiced SSEs. This large gender discrepancy is all the more problematic because men are more likely than women to develop skin cancer.<sup>1</sup>

Although men have a greater lifetime risk, recent data suggest that women aged younger than 40 are more likely

to develop melanoma, which is the most lethal skin cancer (women younger than age 40 have a 1 in 484 risk of developing melanoma, compared with 1 in 795 for men).<sup>1</sup> In fact, for women aged between 25 and 29 years, melanoma is more common than any other nonskin cancer.<sup>4</sup> Thus, skin cancer is a significant health risk for both young men and young women.

To the best of our knowledge, no researchers to date have examined psychosocial factors that might explain gender differences in SSE performances. However, several researchers have recently argued that health-related gender differences may stem from culturally accepted ideals of masculinity and femininity.<sup>9,10</sup> For example, men may reject preventive health behaviors—such as applying sunscreen or performing SSEs—because masculine men are thought to be invulnerable to disease, unconcerned with health threats, and unwilling to fuss with their bodies. Women, in contrast, may embrace health prevention because such behaviors are often ideally feminized.<sup>10</sup>

Ideal notions of femininity may support health maintenance,<sup>10</sup> but investigators have identified beliefs unique to female populations that still serve to undermine preventive health behaviors. For instance, health professionals have noted that one obstacle hindering women's performance of breast self-exams is discomfort associated with touching or looking at the body.<sup>11</sup> Bodily discomfort is not an ideal feminine trait (ie, women are not encouraged to be uncomfortable with their bodies), but it may be typical nonetheless. SSEs require close examination of the entire body on a regular basis; therefore, women who feel less comfortable looking at their bodies also might be less likely to perform SSEs.

Another way of thinking about masculinity, femininity, and bodily discomfort is that they are all forms of normative influence. The model of normative influence by Rimal and Real<sup>12</sup> postulates that perceived norms are predictive of health behavior. The model distinguishes between *injunctive norms* (people's perception of what others want them to do) and *descriptive norms* (people's perception of what others do). Injunctive and descriptive norms are both believed to underlie health behavior.

Researchers also have identified gender differences in adolescent SSE performance.<sup>5</sup> In the present study, we attempted to replicate this finding and to extend our knowledge of psychosocial factors that might underlie gender differences. In light of increasing incidence rates, low adherence to detection strategies, and considerable risk for both genders, public health practitioners must undertake continued formative research in this area.

## METHODS

### Procedure

We recruited participants from introductory public speaking classes. We selected this type of class because it is part of the general curriculum, drawing students from the entire campus community. We had researchers visit the classes during normal class hours and invite students to participate in a study. Students were offered extra credit for their participation. After providing written informed

consent, participants completed a 6-page pen-and-paper survey instrument. At the top of the first page of the instrument, SSEs were defined as “when you examine your skin for potentially cancerous moles, freckles, changes in skin color, or other abnormalities.” After filling out the survey, participants were debriefed about the purpose of the research and offered information on skin cancer and SSEs. The university's institutional review board approved the study protocol.

### Sample

College students ( $N = 218$ ) at a large US university in the Midwest voluntarily participated in the survey. Participants ranged from 18 to 26 years of age, with a mean of 19.5 years ( $SD = 2.67$ ). Slightly more women (53.2%) than men (46.8%) participated in the survey. The sample closely mirrored the racial demographics of the United States: Caucasian or white, 72%; black, 11%; Hispanic, 8.3%; Asian or Pacific Islander, 6.9%; Native American, 0.9%; and other, 1.0%.

In addition to race, participants also reported their skin type. Skin type was similar to distributions in previous studies: skin type I always burns and never tans (5.5%), skin type II burns easily and tans with difficulty (14.2%), skin type III burns sometimes but always eventually tans (53.2%), and skin type IV never gets sunburned because the skin is dark or tans quickly (24.8%). In line with previous researchers,<sup>13</sup> we combined multiple skin types to form 2 categories: skin type I–III (ie, high risk) and skin type IV (ie, low risk).

### Measures

#### Behavior

Two aspects of SSEs are important: (a) how often participants perform self-exams and (b) what areas of the body they check. For the former, participants answered the following question: “How often did you perform an SSE during the past year?” [*once, twice, three times, more than three times (please specify), or did not perform an SSE during the past year*]. For all but the last option, participants further answered: “During your SSE(s), what areas of your body did you examine?” [*head or neck, arms or hands, legs or feet, front torso (chest and abdomen), back torso (back and buttocks), sides or armpits, and other (please specify)*].<sup>5</sup>

#### Beliefs

Several theories posit that individuals' beliefs are key determinants of their health behaviors.<sup>14,15</sup> Using Arnold and DeJong<sup>5</sup> as a guide, we asked participants to indicate the extent to which they agreed with the following belief statements: “I don't know what to look for when performing an SSE,” “I never think of performing an SSE,” “I didn't know I should perform an SSE, and “I don't have time to perform an SSE.” In addition, we thought that previously observed gender differences might be rooted in differing beliefs, so participants also indicated the extent to which they agreed with the following belief statements: “If something changed on my body, I wouldn't need an SSE to notice it” and “In general, looking at my body makes

me feel uncomfortable.” We considered the former to be an indirect measure of masculinity because it suggests that SSEs are unnecessary or are an example of paying too much attention to one’s body. The latter is a direct measure of bodily discomfort. For all belief questions, participants expressed their opinion by using 7-point scales anchored with *strongly disagree* and *strongly agree*.

### Perceived Risk

Arnold and DeJong<sup>5</sup> also found that perceived risk was related to SSE performance. To assess perceived risk, participants answered a question from the psychometric Perceived Risk Index: “Are you personally at risk for skin cancer?”<sup>16</sup> Perceived risk is measured by means of a 7-point scale anchored with *personally not at risk* and *personally at risk*.

### Perceived Norms

We measured 2 types of perceived norms: injunctive norms and descriptive norms. To assess the influence of injunctive norms, participants answered the following question: “What do most people who are important to you think about your performing an SSE?” The associated 7-point Likert-type scale was anchored with *strongly think I should not* and *strongly think I should*. To assess the influence of descriptive norms, participants indicated whether they agreed with the statement “I know or know of people my own age who regularly perform SSEs.” The associated 7-point scale was anchored with *disagree* and *agree*.

### Other Variables

In addition to these variables, participants indicated whether a member of their immediate family had a personal history of skin cancer, whether they had ever been to a dermatologist, whether their dermatology visit involved having a mole examined, whether they had light-colored eyes, whether they had naturally red or blonde hair, and whether they had a lot of freckles.

## RESULTS

Prior research suggested large gender differences in SSE performance. In the present study, women (49%) were more likely than their male counterparts (41%) to have performed at least 1 SSE in the previous year; how-

ever, this difference was not statistically significant ( $\chi^2[1, N = 218] = 1.39, p = .24$ ). Taking frequency of SSE performance into account (eg, performed 1 SSE in the past year) likewise revealed no gender differences ( $\chi^2[4, N = 218] = 5.35, p = .25$ ; see Table 1).

### Body Areas Checked

Men and women did not differ in terms of the number of body areas checked during an exam ( $\chi^2(7, N = 95) = 7.15, p = .41$ ). The mean number of body areas checked was 3.24 ( $SD = 1.72$ , median = 3) for women and 3.39 ( $SD = 2.04$ , median = 3) for men. Moreover, men and women devoted similar attention to different areas of the body. By body region, women were most likely to examine their arms or hands (68%), front torso (67%), head or neck (57%), legs or feet (48%), back torso (46%), and sides or armpits (33%). An identical pattern emerged for men; they were most likely to examine their arms or hands (71%), front torso and head or neck (both at 66%), legs or feet (48%), and back torso and sides or armpits (both at 44%).

### Other Demographics

To better understand how other demographic characteristics related to SSE performance, we performed a binary logistic regression with SSE performance as the dependent variable (performed an SSE, did not perform an SSE). We found 2 demographic variables to be significantly related to SSE performance (see Table 2). White participants and those who had visited a dermatologist to have a mole examined were most likely to have performed an SSE in the previous year.

### Beliefs, Perceived Risk, and Perceived Norms

Demographics aside, we investigated the relationship between SSE performance and several psychosocial variables. Although gender differences had not materialized, we conducted separate linear regressions (one for men, one for women) to generate models for predicting SSE performance. For both analyses, we entered all psychosocial factors (ie, beliefs, perceived norms) as a single block.

For men, the model was significant ( $F[10, 97] = 10.28, r = .74, r^2 = .54, p < .001$ ). The complete model predicted 54% of the variance in SSE performance. In terms of individual relationships between the independent variables and the

**TABLE 1. SSE Frequency by Sex Among University Student Participants**

Frequency of SSE in past year	Male (n = 102)		Female (n = 116)		Total	
	n	%	n	%	n	%
0	60	59	59	51	119	55
1	12	12	16	14	28	13
2	8	8	18	16	26	12
3	10	10	15	13	25	12
4+	12	12	8	7	20	9

Note. SSE = skin self-examination.

**TABLE 2. Demographic Factors Related to Skin Self-Examination Performance Among 218 University Students**

Demographic factor	OR	95% CI
Male sex	0.712	0.397–1.278
< 19 years old	1.280	0.712–2.380
White race	2.668*	1.103–6.454
Skin type I–III	1.430	0.639–3.200
Light-colored eyes	0.865	0.420–1.785
Light-colored hair	1.680	0.769–3.671
Lots of freckles	0.638	0.284–1.436
Family history of skin cancer	1.498	0.755–2.970
Visited a dermatologist	1.420	0.754–2.676
Visited a dermatologist for mole	2.296*	1.101–4.789

Note. OR = odds ratio. CI = confidence interval.  
\* $p < .05$ .

dependent variable, “I never think of performing an SSE” ( $t[97] = -4.35, p < .001$ ) and descriptive norm ( $t[97] = 2.35, p = .02$ ) both significantly predicted SSE performance.

The model was also significant for women ( $F[10, 110] = 17.72, r = .80, r^2 = .64, p < .001$ ). The complete model predicted 64% of the variance in SSE performance. In terms of individual relationships between the independent variables and the dependent variable, “I never think of performing an SSE” ( $t[110] = -5.84, p < .001$ ), “I don’t know what to look for when performing a skin self-exam” ( $t[110] = -2.45, p = .02$ ), and descriptive norm ( $t[110] = 2.41, p = .02$ ) all significantly predicted SSE performance. We also found bodily discomfort to be marginally related to female SSE performance ( $t[110] = -1.71, p = .09$ ).

**COMMENT**

One shortcoming of Arnold and DeJong’s study,<sup>5</sup> acknowledged by the authors, is that they did not ask participants how many times they had performed an SSE nor did they provide a time frame. Instead, participants indicated whether they had ever checked their skin for signs of melanoma or skin cancer. Our question, in contrast, contained both a quantity assessment (how often) and a clear time frame (past year). This small difference in question wording may be significant. In our survey, 45% of participants reported performing an SSE at least once in the previous year (compared with 33% in Arnold and DeJong<sup>5</sup>). Arnold and DeJong<sup>5</sup> also observed a strong gender effect for past SSE performance (17% of men and 49% of women), but no such effect materialized in our study. Part of this observed discrepancy may be related to question differences. For example, our question may have helped participants, especially men, recall previous SSEs. Conversely, our question might have triggered a social desirability norm in men leading them to overestimate past SSE performance. The identical finding for women in both studies (49% here and in Arnold and DeJong<sup>5</sup>) suggests that either our question or their question seriously altered men’s responses. Formative

research would benefit from a continued exploration of question effects.<sup>17</sup>

Our results are limited in several other ways. First, all participants were students attending the same university in the Midwest. SSE practices may differ by region or climate; thus, our results may not translate to other locales. Second, we relied almost exclusively on single-item measures. Knowing whether single-item measures are reliable is impossible—a limitation that becomes all the more problematic in light of the aforementioned conflicting results. In the future, measurement might be improved by situating research on SSE performance within a larger theoretical framework (eg, the health belief model).

Limitations aside, our results suggest that adolescents should be encouraged to perform SSEs, as most young people do not perform SSEs. Even among practitioners, SSEs are typically irregular and incomplete. Thus, in addition to increasing the quantity of young people carrying out regular SSEs, healthcare providers should also encourage both men and women to more thoroughly examine their bodies during SSEs. In particular, adolescents must devote more attention to high-risk areas of the body. The American Academy of Dermatologists notes that the back torso (for men and women), sides of body or armpits (for men), and calves (for women) are all high-risk areas deserving more attention.<sup>4</sup> This advice does not correlate well with existing examination practices among young people. The back torso and sides or armpits were the least examined areas for men. Back torso and legs or feet were the second and third least examined areas for women. Clearly, increased risk and likelihood of examination are inversely related.

In terms of psychosocial factors, several variables were significantly related to SSE performance. The final regression models for both genders suggest that a small number of variables can predict a large percentage of SSE variance. Indeed, one interpretation of our data is that college students’ SSE performance hinges greatly on whether they even think about the behavior. This is an encouraging finding because

it suggests that a public health campaign could have a huge impact on college student SSE performance simply by raising the level of awareness.

Considered by gender, men appeared to base their SSE behaviors on whether they thought about SSEs and whether they perceived peers to be actively engaged in the behavior (ie, descriptive norm). Masculinity did not materialize as a predictor of male SSE performance, a finding at odds with our initial expectations. However, in hindsight, agreement with the statement “If something changed on my body, I wouldn’t need an SSE to notice it” may not be a reflection of masculinity. It could just as easily be a measure of self-sufficiency (or some other factor). Although self-sufficiency is a stereotypically masculine trait,<sup>10</sup> it is still unclear whether an expression of self-sufficiency is also, by default, an expression of masculinity. An index designed to measure masculinity and femininity would be a useful addition to formative research.

Women seemed to base their SSE behaviors on whether they thought about SSEs, knew what to look for, perceived peers to be actively engaged in the behavior, and (to some extent) were comfortable looking at their own bodies. The latter is especially provocative in light of prior research demonstrating a similar relationship in other examination settings.<sup>11</sup> Development of bodily discomfort, as a construct, may suggest further lines of inquiry.

Taken as a whole, the present study suggests several strategies for encouraging SSE performance among adolescent populations. Young people of both genders have trouble remembering to engage in SSEs; therefore, a campaign should strive to raise awareness. Because SSEs are most effective when carried out regularly (something young people struggle with), the campaign should also be enduring. That is, a campaign is unlikely to have a positive effect on SSE performance if it is not maintained over time.

In addition to increasing overall awareness, health practitioners should target adolescents’ descriptive norms (their sense of what other people like them do). Young people were more likely to perform SSEs if they believed other young people engaged in the behavior. Health practitioners could target this belief by using student stories in their campaign or by putting a positive spin on current SSE performance statistics (eg, “Almost half of all students performed an SSE in the past year”). Women might be aided by messages that communicate what to look for during an SSE.

In truth, adolescents of both genders need help carrying out SSEs. At present, young men and women are devoting insufficient attention to the highest-risk areas on their bodies. However, such messages should be sensitive to the fact that bodily discomfort is also related to female SSE performance. Bodily discomfort and detailed information about what and where to look for cancerous lesions are potentially contradictory ideas, so special attention should be paid to pretesting any and all messages intended for a female population.

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## NOTE

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