

Teaching Nursing Students about Skin Cancer Using a Skin Analyzer Machine

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Skin cancer is the only form of cancer that is increasing in frequency in the United States. Over 1 million new cases are diagnosed annually. Every 20 seconds someone is diagnosed with skin cancer and one person dies nearly every hour. Annual occurrence of skin cancer exceeds the combined incidence of cancers of the breast, prostate, lung, and colon (American Cancer Society, 2013). One in five Americans will develop skin cancer in the course of a lifetime (American Academy of Dermatology [AAD], 2015). Melanoma is the leading cause of cancer death in women ages 25-30 and is second only to breast cancer in women ages 30-34 (National Cancer Institute [NCI], 2015). One contributing factor to this epidemic is failure to follow sun-protective behaviors. Many people seek the tanned look, and the use of tanning salons has contributed to the increase in skin cancers in young women. About 90% of non-melanoma skin cancers are associated with exposure to ultraviolet (UV) radiation from the sun. This is a serious public health concern.

The International Agency for Research on Cancer found the risk of melanoma increases 75% when tanning devices are used before age 30. The U.S. Food and Drug Administration declared tanning beds to be in the highest cancer risk category, carcinogenic to humans (Masterson & Thorlton, 2012). Young women are the most frequent users of tanning salons so it is

Nurses are in an excellent position to perform skin assessments and teach the public about skin cancer prevention. Knowledgeable nurses can help reduce the incidence of skin cancer. Determining the best method to teach nursing students about skin cancer is thus important.

important to change their behavior to decrease morbidity and mortality (Hawryluk, 2013).

Literature Review

A literature review through CINAHL, PubMed, and EBSCO databases using *skin cancer* and *nursing education* for 2009-2013 found 1,705 articles. Narrowing the search to nursing research in peer-reviewed journals resulted in 211 articles. Many articles focused on teaching patients about skin cancer. Research on teaching student nurses about skin cancer is lacking.

In quasi-experimental pre-test/post-test research, Kuhrik, Seckman, Kuhrik, Ahearn, and Ercole (2011) studied the value of teaching undergraduate nursing students about skin cancer using simulation during physical assessment classes. The sample included 104 students divided into subgroups so each student could practice on a mannequin with seborrheic keratosis as well as moles of varying sizes and colors with irregular or notched borders.

The debriefing asked students to reflect on what they learned. Four separate debriefing sessions were held and additional data were collected using a survey instrument. Results indicated students felt more confident in identifying suspicious moles after the exercise. They were also more aware of the dangers of the sun and indicated they would be more willing to adhere to sun-protective behaviors.

In another study, Bradley (2012) explored the use of a skin cancer screening tool with six nurse practitioners (NPs) through a pre-test, post-test design. The researcher randomly selected 30 charts for review prior to an educational intervention. The NPs used a skin cancer screening tool with their patients after the education and subsequently reviewed 22 charts. After education and implementation of the screening tool, a 223.4% increase in proper documentation occurred.

A systematic review of the literature by Loescher, Harris, and Curiel-Lewandrowski (2011) sought to determine the skill of advanced

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practice nurses (APNs) in skin cancer detection. The purpose of the review was to explain in a detailed way the current knowledge of APNs' performance of skin cancer examination. Specifically, the foci were barriers to APNs' performance of skin cancer assessments, APNs' ability to recognize and identify suspicious lesions, and APNs' skin cancer detection training activities. Duplicates and articles that clearly did not pertain to nurses or skin cancer, or focused more on knowledge of primary prevention, were eliminated. Twelve articles that reflected the aims of the systematic review were selected for further appraisal. Authors concluded barriers to skin examination by APNs were measured infrequently and inconsistently. Some of the barriers to skin assessment were the limited time and lack of skin cancer assessment training. The implications from this systematic review are that adequate training needs to be accessible and larger studies are needed to facilitate skin cancer assessment.

The desire to tan is so strong that even people who have had melanoma (therefore have a higher chance of getting it again) become lax in their sun-protective behaviors. A small study conducted in Denmark (Idorn, Datta, Heydenreich, Philipsen, & Wulf, 2014) compared 20 people diagnosed with melanoma (three summers prior) to 20 melanoma-free people matching in demographics to determine how well they protected themselves. Participants used daily diaries to record time spent in the sun and use of sunscreen. They also wore watches that measured UV radiation exposure. Participants who had melanoma increased their sun exposure by 25% after the first summer, whereas those who did not have melanoma did not increase their exposure. Health care practitioners need to determine the

best way to improve adherence to sun-protective behaviors.

Teaching sun-protective behaviors and the use of sunscreen is very important.

Significance of Study

If students receive effective instruction about skin cancer and adopt personal sun-protective behaviors, they may be better able to teach their patients about skin cancer and prevention. All patients have a thorough skin assessment on hospital admission; this is an ideal opportunity to teach patients about skin cancer and identify suspicious lesions for physician referral (Siegel, 2012).

Purpose of Study

The purpose of this study was to determine the most effective teaching method to encourage nursing students to change their personal sun-protective behaviors, teach sun-protective behaviors to patients, and assist in skin cancer screenings for patients and the community.

Method

Institutional Review Board approval was granted by the college that served as the study site. Informed consent was obtained by all participants. All tests were secured in a locked file cabinet accessed only by the principal investigator.

This study had a quasi-experimental pre-test/post-test design that examined the teaching methods used in three nursing classes of approximately 30 students each. Teaching methods were lecture only or lecture combined with a skin analyzer machine (SAM) to demonstrate sun damage. The sample of 90 students received a pre-test to assess their skin cancer knowledge, per-

Table 1.
ANOVA Pre-Test

	F	Sig.
Perception	1.473	0.235
Sun-protective behaviors	0.786	0.459
Role of the nurse	1.347	0.265
Knowledge	1.335	0.269
Health promotion	1.319	0.273

ception of the nurse's role in skin cancer prevention, and personal sun-protective behaviors. Participants were divided randomly into three groups. The control group received the pre-test and post-test only. The lecture group received a lecture on skin cancer, and the intervention group received a lecture on skin cancer and the SAM. Students received the pre-test and intervention during the spring semester, then had the intervening summer months to change their sun-protective behaviors and received the post-test during the fall semester.

Results

Pre-test frequency results demonstrated 70% of participants did not examine their skin on a monthly basis even though 97% agreed it is important to teach patients about monthly skin exams. This study sought to increase awareness and change sun-protective behaviors. Educating these participants was important because they were predominantly female and under age 30; melanoma is the leading cause of cancer death in women ages 25-30 and the second only to breast cancer in women ages 30-34 (NCI, 2015).

No significant difference was found among the three groups in their responses on the pre-tests (see Table 1). Thus the group was homogenous in terms of cancer knowledge before the study.

No difference in control and lecture group performance was demonstrated on pre-test and post-test (see Table 2). However, significance was found in three variables

TABLE 2.
Paired Samples *t*-Test

Groups: Control, Lecture, Intervention	Group Performance Pre- and Post-Test	<i>t</i>	df	Sig. (two tailed)
Control group	Perception	-1.477	25	0.152
	Sun-protective behaviors	-0.367	25	0.717
	Role of nurse	-1.952	25	0.062
	Knowledge	-1.537	25	0.137
	Health promotion	-0.311	25	0.758
Lecture group	Perception	-0.445	30	0.660
	Sun-protective behaviors	-1.441	30	0.160
	Role of nurse	-0.737	30	0.467
	Knowledge	-1.830	30	0.077
	Health promotion	0.811	30	0.424
Intervention group	Perception	-3.923	28	0.001
	Sun-protective behaviors	-2.380	28	0.024
	Role of nurse	-1.758	28	0.090
	Knowledge	-2.819	28	0.009
	Health promotion	-1.585	28	0.124

of the intervention group. Use of the SAM led to a significant increase in participant knowledge about acquiring skin cancer and increased their use of sun-protective behaviors. Test results indicated the student nurses already believed it was an important role of the nurse to teach health promotion.

Limitations

Results of this study were confined to one suburban baccalaureate college in New York, which limits generalizability. A convenience sample of 90 students also was a limitation of this study.

Discussion

The tool in this study was used in prior research and had a Chronbach alpha score which ranged from 0.747 to 0.891. Study findings were very similar to the results of a previous study (Siegel, 2009). The intervention had a significant impact on students, when compared to the lecture only and control groups. The intervention group results were as follows: behavior $p=0.024$; perception $p=0.001$; and knowledge $p=0.001$. This suggests use of the

SAM may be an important educational adjunct when instructing student nurses about skin cancer. Seeing their sun-damaged faces with the SAM personalized the students risk and may have prompted them to learn more about skin cancer and sun-protective behaviors. They indicated willingness to change their behavior related to skin protection.

Nursing Implications

Because skin cancer is a serious public health concern (AAD, 2015), nursing faculty should have a dual goal of increasing student awareness of skin cancer and assisting them to become effective patient educators on the topic. Student nurses and nurses act as role models and educate the public about skin cancer and its prevention. Nurses can have a profound effect on the public if they teach hospitalized patients about skin cancer as they examine their skin on admission to the hospital.

Conclusion

This study assessed the knowledge of student nurse participants

regarding skin cancer in the expectation they can educate the public and assist in patient screening. With additional knowledge, nurses may have a positive impact on the incidence of skin cancer. Nurse educators should consider using skin analyzer machines as an adjunct to teaching about skin cancer. [IMSN](#)

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