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Original Research

Promoting early detection of melanoma during the mammography experience☆,☆☆,★

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ABSTRACT

Background: Invasive melanoma, a lethal form of skin cancer, is the seventh most common cancer in women. Factors such as a history of indoor tanning or sunburn and a personal or family history of skin cancer increase a woman's risk of developing a melanoma.
Objective: Because the majority of melanomas occur in patients age 40 years or older, which is the age that is recommended for women to begin screening mammograms, the mammogram experience could be used to promote early detection of melanoma by introducing skin self-examinations (SSE) to a population of women who are already invested in preventive health.
Methods: This was a pilot and feasibility study that was designed to promote the early detection of melanoma among women who undergo a mammogram at the Lynn Sage Breast Center at the Northwestern Medicine/Prentice Women's Hospital in Chicago, Illinois. The study was conducted in three phases: development of the materials, delivery of the program, and assessment of the program effectiveness.
Results: Eighty six percent of women with scheduled mammogram appointments participated in the study (n = 560). Among these women, 68% noticed the SSE information in the changing rooms, 78% thought the information applied to them, and 68% identified with at least one of the risk factors for melanoma. Twenty percent of the patients checked their skin in the changing room, 13% noticed a concerning mole, and 60% of those women who noted a concerning lesion stated their intent to see a dermatologist for further evaluation.
Conclusion: A large proportion of the women in our study had risk factors for developing a melanoma and noticed the SSE information in the screening center. Placing an intervention to encourage methods for the early detection of melanoma in an outpatient mammography environment is an effective strategy to increase awareness in a large proportion of at-risk women.

Introduction

Invasive melanoma is the seventh most common cancer in women. The vast majority of melanomas are curable if they are detected at an early stage, yet more than 9,700 patients in the United States are estimated to die of melanoma in 2017 (American Cancer Society, 2017). There may be an opportunity to reduce melanoma mortality by increasing the awareness for the need to perform skin self-examinations (SSE) among at-risk people and especially women who have engaged in deliberate tanning.

The incidence of melanoma has increased 3% per year for the last two decades, which is in part due to indoor tanning by young women. In 1994, 16% of female teenagers in Illinois between the ages of 11 and 19 years tanned indoors, which increased to 40% among women between the ages of 18 and 30 years old (Robinson et al., 1997; Schneider and Kramer, 2010). Almost 30 million individuals tan indoors every year in the United States and the majority are women (Levine et al., 2005).

Exposure to tanning beds before age 30 years increases a person's risk of developing melanoma by 75% and 10 or more sessions in a lifetime is linked to a six-fold increased risk (Melanoma Research

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Foundation, 2017). Melanoma is the second most common type of cancer in young adults; however, the majority of melanomas occur in persons who are age 40 or older and the risk of developing melanoma persists throughout a woman's entire life. The U.S. Food and Drug Administration recently issued risk statements that recognize the need for regular skin examinations among women who have tanned indoors. Additional recognized risks for the development of new melanomas are a personal history of melanoma or nonmelanoma skin cancer and a family history of melanoma (based on a pooled relative risk of 6.9 or 6.4, respectively; Gandini et al., 2005; Robinson, 1997).

To raise awareness of the risk of developing melanoma for the vast numbers of women who are at-risk requires an easily disseminated, low cost intervention. Because women begin screening mammograms at 40 years of age, it may be possible to use the mammogram experience as a teachable moment to raise melanoma awareness and encourage SSE (Simmons et al., 2008). These women may be especially receptive to adopting a new early detection health promotion behavior such as a SSE because they were engaged in health promotion by undergoing a mammogram (Glanz et al., 2002). Women who undergo a mammogram may be particularly interested in learning how to recognize their own risk for melanoma, decide that SSE for melanoma detection is relevant, learn to perform SSE, and make decisions about seeking the care of a physician for a concerning mole. This research explored the feasibility to enhance awareness of the risk to develop a melanoma and motivate women to adopt SSE.

Materials and methods

This pilot and feasibility study was designed to promote the early detection of melanoma among women who undergo a mammogram at the Lynn Sage Comprehensive Breast Center at the Northwestern Medicine/Prentice Women's Hospital in Chicago, Illinois. Screening with mammography begins at 40 years of age at Northwestern Medicine. The hypothesis was that women who are already engaged in health promotion by undergoing a mammogram will be able to assess the personal relevance of SSE on the basis of informational material that is placed in the breast center changing rooms, be interested in learning about SSE for melanoma detection, and be able to implement SSE while partially disrobed in the privacy of the changing room. This study consisted of three phases: development of the materials (qualitative research component), delivery of the educational SSE program, and assessment of the program effectiveness (quantitative research component). The study was approved by the Institutional Review Board of Northwestern University.

Study design

Development phase

The development phase began during the first week of March 2017 with the creation of an informational poster and brochure. The brochure included a list of risk factors that would enable a woman to assess whether she was at increased risk to develop a melanoma, the "ABCDE rules" with instructions on how to score features of a mole, instructions on how to make a decision about seeking medical care for a mole, and pictured examples of benign moles and melanomas. Both healthcare professionals and women who underwent mammograms evaluated the brochure. Women at the screening center were asked the following questions in a structured-interview: (1) *Would you be interested in taking the brochure home to learn more about checking your skin for melanoma? (2) Would you be interested in sharing the brochure with family or friends? (3) Would you be willing to check your skin while you are changing today?* (Table 1). The women were asked to explain why they answered either yes or no for each question and whether they had any additional suggestions on how to make the brochure more appealing. The research assistant recorded the comments, which were later summarized and analyzed for key patterns and themes using principles from the Interpretative Phenomenological Analysis (Clayman et al., 2009). Iterative changes were made on the basis of feedback that the research assistant received after each set of 25 interviews.

The research assistant also developed an informational poster to introduce the concept of a SSE for melanoma detection and direct women to pick up the brochure (Fig. 1). Both healthcare professionals and women who underwent mammograms evaluated the poster. The women at the mammography screening center were asked the following question in a structured interview: *If you saw this poster, would you want to learn more about how to check your skin for skin cancer of the melanoma type?* The women were then asked to explain why they answered either yes or no and whether they had any suggestions to make the poster more appealing. The responses were recorded and reviewed for common themes and iterative changes were made on the basis of the feedback received after each set of 25 interviews.

Delivery of educational skin self-examination program

During the last week of March 2017, each of the eight changing rooms at the Lynn Sage Comprehensive Breast Center was equipped with a poster, 10 brochures, a magnifying glass, and a ruler. The magnifying glass and ruler were installed with two separate chains, the poster was attached to a wall across from the doorway at eye-level, and the brochures were placed in holders on a shelf near a large mirror that was present in each room. Women could use this mirror to see their face and chest. The materials were installed at the start of the spring season because seeing the sun may help recall a prior sunburn, which is associated with the development of a melanoma. The materials remained in the changing rooms for 3 weeks (from March 27 to April 14, 2017).

Assessment of program effectiveness

A female research assistant performed in-person exit interviews to ascertain whether the women had noticed the poster and brochure (Table 2; Fig. 2). If they did, they were asked if they thought the information applied to them and why and whether they chose to check

Table 1
Subject responses from structured-interviews during the development phase

	If you saw this poster, would you want to learn more about how to check your skin for skin cancer of the melanoma type?	*Would you be interested in taking the brochure home to learn more about checking your skin for melanoma?*	*Would you be interested in sharing the brochure with family or friends?*	*Would you be willing to check your skin while you are changing today?*
Day 1	23/25	23/25	21/25	21/25
Day 2	19/25	21/25	18/25	18/25
Day 3	-	23/25	22/25	21/25

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