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Thoroughness of skin examination by melanoma patients: Influence of age, sex and partner

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Abstract

The aim of this study was to determine the thoroughness of deliberate skin examination by people with a history of melanoma. Patients were randomized into one of two conditions: either to receive the brief educational and skills training intervention alone or as a couple with their spouse or cohabiting partner. Subjects recorded concerning lesions on body maps. At the 4-month visit, a total body skin examination was performed by a dermatologist blinded to the subjects' condition and to their recorded responses. The skin surface was divided according to the region's visibility during skin self-examination and sexual connotations: visible/not sexually sensitive, non-visible/not sexually sensitive and sexually sensitive. The primary point of comparison was missed lesions, defined as the difference between lesions recorded by the subjects and their partners and those recorded by the dermatologist. Among 130 participants, 56 subjects reported partner assistance while performing SSE. Participants missed more lesions in sexually sensitive areas than in the other regions. With the increasing age of the patient, the number of missed lesions in non-visible/not sexually sensitive and sexually sensitive areas decreased. Male patients assisted by female partners missed fewer lesions in all three regions than female patients assisted by male partners. In easily visible areas, male patients missed significantly fewer lesions than female patients ($P = 0.01$). Older couples performed more thorough partner-assisted skin examinations in non-visible and sexually sensitive areas than younger couples. Male patients who were assisted by female partners performed more thorough partner-assisted skin examinations than female patients assisted by male partners.

Keywords

early melanoma detection; partner-assisted skin examination; skin-self examination

INTRODUCTION

Early detection and surgical excision of melanoma in a curable stage is the most effective method to decrease mortality, which has remained relatively stable in recent years.^{1,2} Because patients who have no training in performing SSE report detecting between 44 and 57% of melanomas,^{3,4} training those at risk to develop melanoma to perform SSE and seek care for a suspicious lesion is a potentially important way to facilitate reduction in mortality.

Skills training focused on those at risk to develop melanoma may make it possible to realize the estimated 63% reduction in melanoma mortality by SSE predicted more than a decade ago.⁵

Patient education increases knowledge, awareness and SSE performance among those at risk to develop a melanoma,^{6,7} but certain areas are not visible to the patient. Unlike the breast or testicular self-exam, thorough skin inspection requires the help of a spouse, a family member or a caregiver to examine difficult-to-see body areas, for example, the crown and back of scalp, buttocks, posterior thighs and genitalia. Difficulty in inspecting these areas may account for the poor prognosis of melanomas arising in the scalp and anogenital areas. Lesions posterior to the tragal line of the hair-bearing scalp have a worse prognosis than those in the visible scalp.⁸ The 5-year survival rate for cutaneous melanoma is 92%,⁹ for vulval melanoma it is 36%^{10,11} and for penile melanoma it is 39%.¹²

Although studies have looked at the role of partners in increasing SSE behaviour,^{13,14} to our knowledge no study has examined the extent of skin inspection with or without partner assistance, and confirmed this by a dermatologist's independent evaluation of clinically suspicious lesions. The current study examines how the age and sex of the patient influence the thoroughness of PASE. We hypothesized that subjects with partner assistance would examine areas of the skin that were easily seen (visible) and not considered SS as well as hard-to-see body areas (non-visible) that are not SS, but that areas perceived as having sexual connotations would be examined less often.

METHODS

Sample and procedure

The study population was composed of 130 melanoma patients who were being seen at least annually by a physician for their skin condition. Eligible subjects and partners were in a cohabiting relationship for at least 1 year prior to the intervention, and had the ability to read the fine print of a newspaper. Specifics on the inclusion and exclusion criteria have been published previously.¹⁵ The institutional review boards of Dartmouth–Hitchcock Medical Center and Northwestern University approved the research protocol.

Participants received an educational and skills training intervention designed to teach effective SSE and were randomized into either a dyadic (couple) learning condition ($n = 65$), or solo learning condition in which the patient received the intervention alone ($n = 65$). The intervention consisted of a demonstration of the ABCDE rule, a 15-min skills training session, and distribution of an enabling kit consisting of a laminated card with colour examples illustrating the ABCDE rule on the front, and on the reverse five drawings illustrating checking body sites using a hand-held mirror, a lighted hand magnifying glass, a millimetre ruler, and diagrams of the body positions needed to perform a complete SSE. In addition to the enabling kit, participants were given a set of body maps to use as a diary to guide SSE and to mark lesions of concern found during SSE.

Measures

Body maps

The outcome was the thoroughness of skin examination by participants. Indicating lesions of concern on the body maps is a proxy for inspecting the area. Participants were asked to mark on their body maps all lesions having at least two of the following criteria: irregular border, a variety of colours, and a diameter of 6 mm or greater. Participants checked off the concerning features of the moles on a flowchart of ABCDE features. They were encouraged to add new moles or note changing features of moles on a monthly basis.

Our modifications of the anatomical areas of the body were consistent with other studies that report on visibility.^{4,16,17}

1. ESNS areas included the face, scalp anterior to the tragal line, anterior and helical rim of the ears, anterior neck extending bilaterally to the ear lobes, chest (not including the breasts in women), abdomen, arms, legs and dorsum of feet (not including the upper inner thighs).
2. HSNS areas included scalp (posterior to the tragal line), posterior ears, posterior neck, shoulders, lower back, back of legs, soles, between the toes and the axillae.
3. SS areas included breasts in women, and the genitals, upper inner thighs and buttocks in both men and women.

Skin examination by a dermatologist

At the 4-month visit, a dermatologist (JKR), who was blinded to the subjects' condition and recorded responses in their diary, performed a total body skin examination and documented all clinically suspicious lesions in the medical record. After completion of the study, a retrospective review of the medical record was performed by the dermatologist, who was again blinded to the sites marked by the subjects and/or their partners on the body maps during PASE or SSE. The dermatologist (JKR) noted the clinical diagnosis and the location of the suspicious lesion on the body maps. The body maps completed by the dermatologist and those completed by the couples and by the subject were compared by the analytic team (JS and RT) to determine the number and location of clinically suspicious lesions overlooked by subjects during PASE or SSE. The average number of lesions missed was calculated as the total number of concerning lesions found by participants subtracted from the total number found by the dermatologist. This comparison also allowed for the computation of the proportion of concerning lesions missed. The proportion was then calculated as the average number of lesions missed divided by the total number found by the dermatologist. The proportion is a more accurate measure of PASE or SSE thoroughness, given that it corrects for the total number of spots in each body category.

RESULTS

A total of 56 pairs (40 from the dyadic training group, 16 from the solo training group) stated that they had a partner help check the skin. Of the 56 pairs, 40 were reported to be spouses, 12 reported partners were close friends of the opposite sex, three reported partners were close friends of the same sex, and one reported partner was a daughter. There were no statistically significant differences in the sex, age, education, household income, marital status or family history of skin cancer between those who reported PASE and those who did not (Table 1).

Table 2 shows the average number of concerning lesions missed by the subject during SSE and by the subject and partner during PASE by body region. Of the 65 patients randomized to the solo learning condition, 45 did not perform skin checks, 16 invited their partner to help, and four marked clinically suspicious sites on the body maps. One-way ANOVAs revealed significant mean differences between body regions on both the average number of lesions missed by the subject and the partner during PASE ($F(2, 165) = 7.69, P < 0.001$). Tukey's least-significant difference post-hoc test for PASE revealed that the average number of missed lesions was significantly lower in both the ESNS (0.46) and HSNS (0.39) areas compared with SS areas (1.07; all $P < 0.001$). The mean difference between ESNS and HSNS was non-significant. A different pattern was found for the people who performed SSE, with a higher proportion of missed lesions in HSNS areas (0.46) compared with SS

(0.06) and ESNS (0.13); however, the sample size is inadequate for analysis for statistical significance.

With respect to PASE, younger couples were found to have missed more lesions in SS areas than older couples (Fig. 1). This linear relationship is significant for both the SS ($b = -0.448$, $SE = 0.108$, $P < 0.001$) and the HSNS ($b = -0.196$, $SE = -0.061$, $P < 0.01$); however, the effect only approached significance for the ESNS areas ($b = -0.128$, $SE = 0.072$, $P = 0.08$).

As determined by the percentage of missed lesions for those performing PASE, male patients assisted by their female partners missed fewer lesions in all three categories than female patients assisted by male partners (Fig. 2). Comparing the mean of the proportion of missed lesions in ESNS areas revealed a significant difference between men ($M = 0.02$, $SD = 0.06$) and women ($M = 0.11$, $SD = 0.15$) ($P < 0.01$). The difference approached significance when comparing men ($M = 0.10$, $SD = 0.24$) and women ($M = 0.17$, $SD = 0.30$) on SS body areas ($P = 0.087$). The difference between men ($M = 0.37$, $SD = 0.44$) and women ($M = 0.57$, $SD = 0.46$) was non-significant when considering HSNS areas ($P > 0.10$).

DISCUSSION

Patients and their partners missed significantly more lesions of concern in SS areas compared with areas that were easy and hard to see but not SS. In addition, male patients with female partners had fewer missed lesions in all three categories of body areas. The importance of the role of the partner is emphasized by the action of the 16 patients in the solo learning condition who invited their partner to check the skin, and by the very few solo learners who performed SSE. The term PASE was created to recognize the partner's role in skin checking.

Younger couples missed more lesions in SS areas than older couples. Older couples may have more practice at taking turns in the role of caregiver and be more experienced in providing health care to their partners than younger couples; therefore, having their partner check SS areas has gained acceptance.¹⁸ Also, older patients may have more health awareness or anxiety based on their experience with comorbid diseases in addition to having melanoma; thus, they may be willing to overcome uneasiness or embarrassment with the partner checking their skin for the sake of reassurance about being thorough and checking everything.

In this study, the enabling kit included drawings illustrating how to use a hand-held mirror to perform a complete SSE, including buttocks, breasts and genitals. Unlike the skills training for the ABCDE rule, the diagrams of how to check various areas of the body were not discussed during the intervention, nor was use of the hand-held mirror practiced during the skills training. The physician may help the couple overcome the initial hesitancy to inspect a 'taboo' body area by informing patients that their partners can assist with skin checks of moles in hard-to-see places, and by educating patients about the need to check areas that are less exposed to the sun (e.g. genitals). Future research will explore the impact of having younger high-risk patients give permission to the dermatologist to invite their partner to participate in the skin examination, including the buttocks, breasts and anogenital areas.

The higher prevalence of preventive behaviours in women may provide an explanation for our finding that male patients with female partners had fewer missed lesions in all three categories of body area.¹⁹ Women may be more insistent on performing a thorough exam of their partners than men are with women partners. Women's self-consciousness about bodily attractiveness may play a role in determining their comfort in undressing and showing their

hard-to-see areas and SS areas to their partner.^{20–22} In addition, body and genital self-image are affected by individual cultural upbringing and societal norms, which may be barriers to SSE and PASE.^{23,24} The nature of PASE is to critically examine what some may deem to be ‘flaws’ on the skin. Future research will explore body image, cultural beliefs and self-consciousness as barriers to PASE, as well as ways to enhance the acceptance of, comfort with and training in PASE.

The primary limitation of this study is the use of documentation of concerning lesions on the body maps as a surrogate for visual inspection of the body area. Patients were encouraged to note all lesions that met at least two of the ABCDE criteria and to follow the sites monthly for change. A couple may have performed a thorough skin examination, but did not determine that a lesion was concerning; therefore, an area may have been examined but no entry was made on the body maps. When a lesion was recorded, assignation of the discovery to the subject or partner was not made. Another limitation is that we did not gather information about the duration of the patient–partner relationships. Due to the limited sample size, it is not possible to examine the question of whether partners discovered lesions that were missed by those performing unassisted SSE. The period of 4 months is too short to expect new lesions to develop. The limitations of this research mean that our findings should be viewed as defining trends that require further investigation. The findings cannot be extended to those without a history of melanoma. In addition, the educational intervention provided as part of this research increased the likelihood of obtaining partner assistance with skin checks.

In conclusion, younger age and female sex of the patient with male partner assistance were associated with more missed lesions during PASE. By addressing the patients’ difficulty in seeing certain areas during SSE and by giving permission to invite the partner to help check these areas, physicians encourage the performance of PASE. Future research will explore the mediators of PASE in a study of longer duration that will support the analysis of both the extent and the accuracy of PASE. Although SSE and PASE are important initial steps, a dermatologist needs to perform frequent thorough screenings for those with a personal history of melanoma, and for those with a family history of dysplastic nevus syndrome or melanoma.

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Abbreviations

ABCDE	asymmetry, border irregularity, colour variegation, diameter greater than 6 mm, and evolution
ESNS	easy-to-see, not sexually sensitive areas
HSNS	hard-to-see, not sexually sensitive areas
PASE	partner-assisted skin examination
SS	sexually sensitive areas
SSE	skin-self examination

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Figure 1.

Patient age predicts number of missed areas of concern in partner-assisted skin examination. Younger couples were found to have missed more lesions in (—) sexually sensitive (SS) areas than older couples. This linear relationship is significant for both the SS and (---) the hard to see, not sexually sensitive areas (HSNS). The effect was only marginally significant for (.....) the easy to see, not sexually sensitive areas (ESNS).

Figure 2. Patient sex and missed concerning lesions during partner-assisted skin examination. Male subjects assisted by their female partners missed fewer lesions in all three categories than female subjects assisted by male partners. (■) Men; (□) women.

Table 1

Demographic variables

Variable	Partner-assisted SSE (n; (%))	No partner- assisted SSE (n; (%))
Total (n)	56	74
Sex		
Male	30 (54)	26 (46)
Female	35 (47)	39 (53)
Age (years)		
18–29	8 (14)	10 (14)
30–39	13 (23)	15 (20)
40–4	13 (23)	10 (14)
50–59	8 (14)	8 (11)
60–69	11 (20)	19 (26)
≥70	3 (05)	12 (16)
Education level		
High school or less	12 (21)	16 (22)
Some college	16 (29)	26 (36)
College graduate	25 (45)	25 (34)
Graduate degree	3 (05)	6 (08)
Income (US\$)		
<20 000	6 (11)	7 (10)
20 000 to 50 000	35 (62)	48 (66)
51 000 to 100 000	10 (18)	8 (11)
>100 000	5 (09)	10 (14)
Marital status		
Married	40 (73)	49 (69)
Never married	12 (22)	12 (17)
Divorced/separated	3 (05)	10 (14)
Family history of skin cancer		
Yes	30 (54)	29 (40)
No	18 (32)	31 (42)
Don't know	7 (13)	13 (18)

SSE, self skin examination.

Table 2

Average number and proportion of missed lesions during partner-assisted skin examination and skin-self examination by body region

Category of body areas	Average no. of lesions missed (<i>SD</i>)	Proportion of lesions missed (<i>SD</i>)
Partner-assisted skin examination (<i>n</i> = 56)		
Easy to see, not sensitive	0.46 (± 0.81)*	0.06 (± 0.12)*
Hard to see, not sensitive	0.39 (± 0.73)*	0.13 (± 0.27)*
Sexually sensitive	1.07 (± 1.36)*	0.46 (± 0.45)*
Skin self-examination (<i>n</i> = 4) [†]		
Easy to see, not sensitive	1.20 (± 0.84)	0.17 (± 0.78)
Hard to see, not sensitive	3.80 (± 0.11)	0.56 (± 0.14)
Sexually sensitive	1.80 (± 0.44)	0.21 (± 0.15)

* Mean difference at $P < 0.001$.

[†] Sample size is too small to permit analysis.