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The use of dermoscopy following a one-day workshop among family medicine residents

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Abstract

Skin cancer is the most common form of cancer in the United States. The purpose of this study is to determine if a single grand rounds workshop impacts the use of dermoscopy in a family medicine residency training program. Dermoscopy is a non-invasive tool to allow for higher magnification of skin lesions thereby increasing the ability to assess qualities which are unable to be seen by the naked eye. This study utilized a pre- and post-workshop survey questionnaire to assess participant practices in evaluation, diagnosis, and management of skin lesions. Eighteen residents completed the survey prior to the grand rounds workshop. Nine residents completed the follow-up survey three-months post-workshop. The results showed that the frequency of dermoscopy use increased post-workshop (Pearson's Chi Square=8.83, $p=0.012$; Fischer's Exact=0.008) and residents felt dermoscopy decreased the need to refer skin lesions (Pearson's Chi Square=9.11, $p=0.028$; Fischer's Exact=0.023). However, there was no significant change in resident comfort level when using dermoscopy post-educational workshop (Pearson's Chi Square=5.34, $p=0.255$; Fischer's Exact=0.272).

Keywords

Dermoscopy, melanoma, family medicine, skin cancer, magnification, diagnose

Introduction

Skin cancer is the most common form of cancer in the United States.¹ Among the types of skin cancers, melanoma is the leading cause of skin cancer deaths.^{1,2} Individuals who die as a result of melanoma average 20.4 years of potential life lost versus 16.6 years of potential life lost with other malignant cancers.² Early detection is crucial in the prognosis of melanoma skin cancer. The 5-year-survival rate if detected early and if less than 1mm in thickness is greater than 94% versus a survival rate of less than 56.6% once the lesion is over 4mm.³⁻⁵ Primary care physicians are often the first evaluators of skin cancers and thus play a crucial role in the detection of skin cancers. Dermoscopy is a non-invasive tool that allows for higher magnification of skin lesions and gives providers the ability to assess qualities of lesions that cannot be seen by the naked eye.⁶ Utilizing dermoscopy when evaluating skin lesions has been shown to improve the ability of primary care physicians and medical students to detect skin cancers.^{7,8}

The goal of this study was to determine if a single informative grand rounds workshop focusing on the use of dermoscopy would impact the practices of family medicine residents. The authors hypothesized that after the workshop, the residents would increase their use of dermoscopy in clinical practice and also have an increased level of comfort when evaluating skin lesions with dermoscopy.

Methods

This study received IRB approval. An anonymous seven question survey (Appendix 1) was administered to residents in the Department of Family and Community Health at Marshall University Joan C. Edwards School of Medicine in Huntington, WV. The survey utilized a Likert scale to determine the participant's current practices in evaluation, diagnosis, and management of skin lesions. Initially, eighteen residents were surveyed ($n=18$). The participants attended a ninety-minute grand rounds workshop that discussed the instrumentation involved in dermoscopy, the benefits of its use, and how to use dermoscopy when evaluating skin lesions.

Three months after the workshop the survey was re-administered via an online form to participating residents to see if their practices had changed to any degree. Nine residents completed the survey at three months following the workshop (n=9). The survey was administered again at six-months post-workshop; however, only three participants responded. Due to a low response rate, the data from the six-months post-workshop survey has been excluded.

Results

Eighteen residents completed the survey prior to the grand rounds workshop. Nine residents completed the follow-up survey after three months. The responses to these surveys can be found in Table 1 below. This study focused on the responses to questions 5, 6 and 7, which refer to the utilization of dermoscopy. Charts showing the percentage of residents who responded to each answer choice at pre-workshop and post-workshop are plotted below (Figures 1-3).

Question number five of the survey looked at how frequently residents used dermoscopy when evaluating skin lesions. The Chi-square test for association showed that at the 95% Confidence Interval, there was a significant change in the frequency of dermoscopy utilization by residents post-educational workshop (Pearson's Chi Square=8.83, $p=0.012$; Fischer's Exact=0.008). Question number six assessed comfort levels when using dermoscopy. The Chi-square test for association showed that at the 95% Confidence Interval, there was no significant change in resident comfort level when using dermoscopy post-educational workshop (Pearson's Chi Square=5.34, $p=0.255$; Fischer's Exact=0.272). Question number seven assessed whether residents felt dermoscopy decreased their need to refer skin lesions. The Chi-square test for association showed that at the 95% Confidence Interval, utilizing dermoscopy decreases the need for referral of some skin lesions evaluated by residents (Pearson's Chi Square=9.11, $p=0.028$; Fischer's Exact=0.023).

Survey Question	Response Options	Response prior to workshop (n=18) (number, %)	Response 3 months post-workshop (n=9) (number, %)
1. I routinely ask patients if they have any changing or growing moles.	Never	7, 39%	0, 0%
	Sometimes	9, 50%	8, 89%
	Frequently	1, 6%	1, 11%
	Always	1, 6%	0, 0%
2. I routinely include a skin evaluation in my physical exams.	Never	0, 0%	0, 0%
	Sometimes	15, 83%	6, 67%
	Frequently	2, 11%	2, 22%
	Always	1, 6%	1, 11%
3. I am comfortable making the diagnosis of seborrheic keratosis.	Strongly Disagree	0, 0%	0, 0%
	Disagree	0, 0%	0, 0%
	Neutral	3, 17%	2, 22%
	Agree	10, 55%	3, 33%
	Strongly Agree	5, 28%	4, 44%
4. I am comfortable with my ability to recommend a skin lesion needs biopsy.	Strongly disagree	0, 0%	0, 0%
	Disagree	2, 11%	0, 0%
	Neutral	6, 33%	3, 33%
	Agree	8, 44%	4, 44%
	Strongly Agree	2, 11%	2, 22%
5. I use dermoscopy when evaluating skin lesions.	Never	17, 94%	4, 44%
	Sometimes	1, 6%	4, 44%
	Frequently	0, 0%	1, 11%
	Always	0, 0%	0, 0%
6. I am comfortable assessing skin lesions with the dermoscope.	Strongly disagree	8, 44%	2, 22%
	Disagree	5, 28%	1, 11%
	Neutral	4, 22%	3, 34%
	Agree	0, 0%	1, 11%
	Strongly Agree	1, 6%	2, 22%
7. Dermoscopy use decreases my need to refer some skin lesions.	Strongly disagree	1, 6%	2, 22%
	Disagree	4, 23%	0, 0%
	Neutral	11, 65%	3, 33%
	Agree	1, 6%	4, 44%
	Strongly Agree	0, 0%	0, 0%

Table 1. Responses to initial survey and three-months post-education workshop.

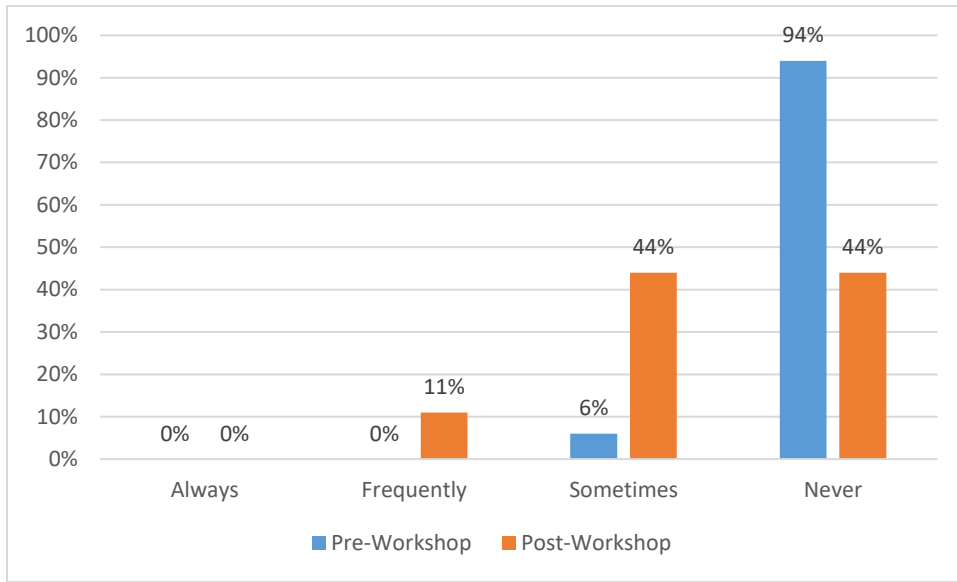


Figure 1. Chart showing the resident responses to question 5 on the pre- and post-workshop survey.

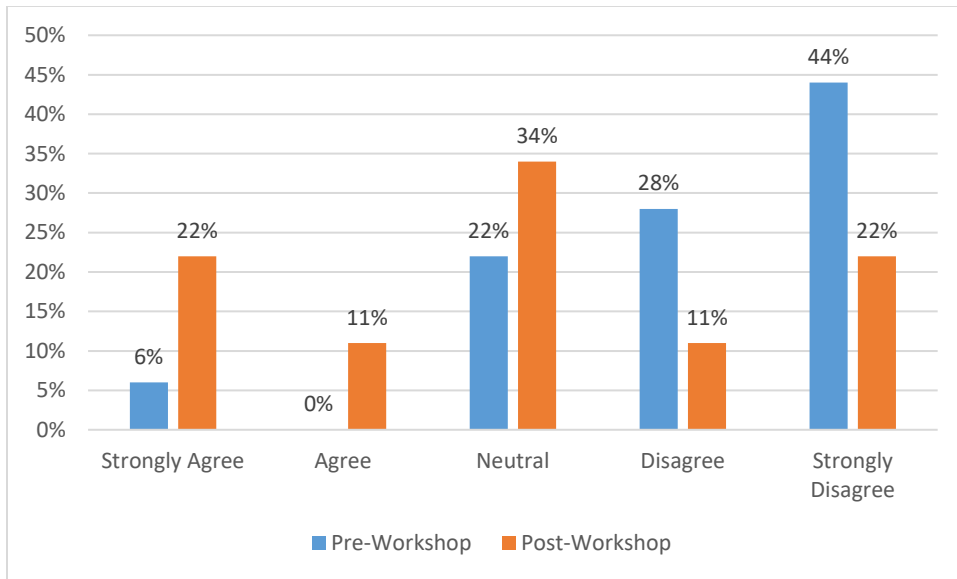


Figure 2. Chart showing the resident responses to question 6 on the pre- and post-workshop survey.

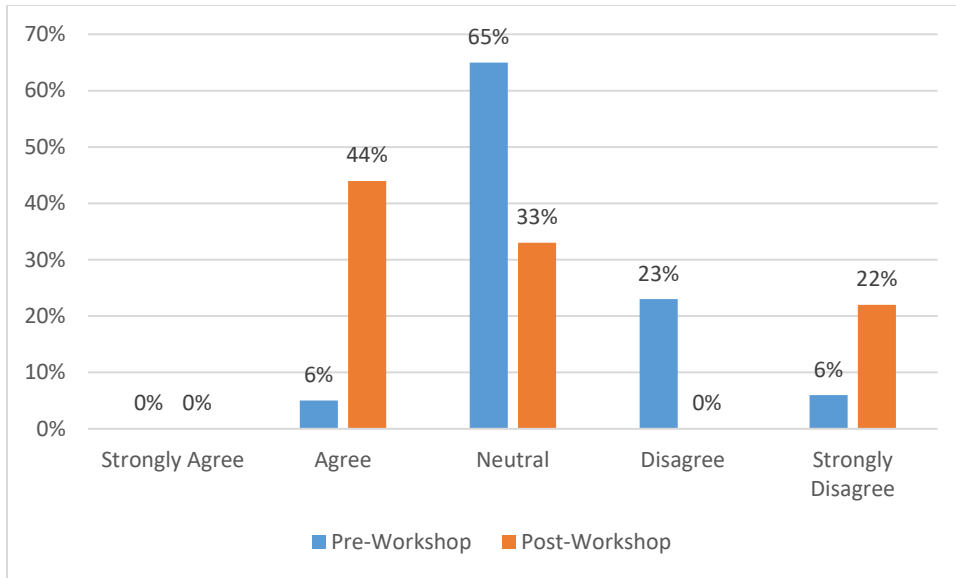


Figure 3. Chart showing the resident responses to question 7 on the pre- and post-workshop survey.

Statistics

The data were analyzed using STATA.

A Chi-Square Test for Association with a Fischer Exact Test was performed for each question on the survey questionnaire. The results of the statistical analysis are as follows in Table 2.

Question Number	Pearson's Chi Squared Value	p-value (95% CI)	Fischer's Exact
1	5.69	0.128	0.079
2	0.96	0.617	0.479
3	1.22	0.545	0.562
4	1.50	0.682	0.872
5	8.83	0.012	0.008
6	5.34	0.255	0.272
7	9.11	0.028	0.023

Table 2. Results of Chi-Square Test of Association for each question on the survey questionnaire. Questions 5 and 7 showed statistically significant results.

Discussion

Skin conditions are one of the most common reasons for health care visits. In a study performed by the Mayo Clinic in a population in Minnesota, 42.7% of the patients had at least one ICD-9 code for a skin condition in a 5-year period, the most frequent type of any condition.⁹ Many individuals with skin conditions or lesions are not seen on a regular basis by a dermatologist. In fact, primary care providers are often the ones who are first evaluating suspicious skin lesions and sometimes the only physicians a patient may consult for skin care.¹⁰ This reiterates the importance for the need of primary care physicians to accurately and confidently diagnose and refer suspicious skin lesions when needed.

Dermoscopy allows providers to thoroughly visualize qualities of skin lesions in a non-invasive manner. Numerous studies have shown that dermoscopy provides primary care providers with an advantage when viewing pigmented skin lesions and increases diagnostic abilities compared to the naked eye.^{6,11-14} Dermoscopy has been shown to increase sensitivity for melanoma detection without a change in specificity among family physicians.^{11,14} The use of dermoscopy has also been shown to increase the confidence of primary care providers when deciding when to refer suspicious lesions for biopsy or further evaluation.^{11,14}

Increasing diagnostic accuracy of primary care providers in relation to dermatologic skin conditions should theoretically lead to an increase in the detection of melanoma and non-melanoma skin cancers. This is important because early detection of melanoma skin cancers has a major impact on survival. Melanoma that is detected early, at a lower stage, has a higher five and ten-year survival. A T1aN0M0 melanoma has a 5-year survival of 93% versus a T4aN0M0 melanoma having a 53% five-year survival rate.⁵

Short training sessions utilizing dermoscopy, such as the one-time workshop in this study, have been shown to be effective in leading to an increase in diagnostic accuracy of melanoma and non-melanoma skin cancers among physicians following these short day-or-less training courses.^{15,16} Our study aimed to build on this principle and show that a single grand rounds dermoscopy workshop can also lead to an increase in the use of dermoscopy among residents at three months and improve triage capabilities of residents.

The results of this study indicate that a single grand rounds workshop has the potential to increase the use of dermoscopy among family medicine residents and have an effect on the decision to refer skin lesions. Our study did not show a significant change in resident comfort levels post-workshop. However, we would expect that resident comfort levels would increase with repeated training and more frequent utilization of dermoscopy in practice. The importance of primary care providers being adequately trained to diagnose and refer skin lesions has been discussed in this paper. The use of dermoscopy can bridge the gap between primary care providers and dermatologists through the recognition and diagnoses of skin cancers to allow for earlier treatment in the critical periods.

Conclusion

Dermoscopy has been shown to be a valuable tool in the diagnosis and evaluation of skin lesions. This study indicates that a single grand rounds workshop has the ability to impact the use of dermoscopy among family medicine residents. The results of this study demonstrated a statistically significant increase in the frequency of use of dermoscopy among residents and a

statistically significant decrease in their need to refer skin lesions following a single dermoscopy workshop. However, a single educational workshop did not lead to a statistically significant increase in comfort levels when utilizing dermoscopy. Even though the results of the study indicate that a single workshop can be successful in impacting the behaviors of family medicine residents, further research is needed to provide more evidence.

Limitations

This study was limited by the number of residents who responded to the survey at three and six-months following the workshop. The study was also limited by the diversity of the residents as all of the residents surveyed were from a single residency program at a single institution. Data analysis was limited by the survey being administered as anonymous which prevents the data from being analyzed as a paired sample. The study could be improved upon by having a larger sample size and with a more diverse group of participants. Future studies should attempt to attain a higher response rate and follow residents longitudinally for longer than three months to investigate whether a single workshop could induce sustained behavioral changes. Future studies could also actually monitor the frequency in which residents utilize dermoscopy and refer skin lesions prior to and following the workshop intervention to determine changes in behavior.

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Appendix 1. Survey questionnaire conducted prior to the educational workshop and three months post-workshop.

<p>1) I routinely ask patients if they have any changing or growing moles</p>	<ul style="list-style-type: none"> <input type="radio"/> Never <input type="radio"/> Sometimes <input type="radio"/> Frequently <input type="radio"/> Always
<p>2) I routinely include a skin evaluation in my physical exams.</p>	<ul style="list-style-type: none"> <input type="radio"/> Never <input type="radio"/> Sometimes <input type="radio"/> Frequently <input type="radio"/> Always
<p>3) I am comfortable making the diagnosis of seborrheic keratosis.</p>	<ul style="list-style-type: none"> <input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
<p>4) I am comfortable with my ability to recommend a skin lesion needs biopsy.</p>	<ul style="list-style-type: none"> <input type="radio"/> Strongly disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
<p>5) I use dermoscopy when evaluating skin lesions.</p>	<ul style="list-style-type: none"> <input type="radio"/> Never <input type="radio"/> Sometimes <input type="radio"/> Frequently <input type="radio"/> Always
<p>6) I am comfortable assessing skin lesions with the dermoscope.</p>	<ul style="list-style-type: none"> <input type="radio"/> Strongly disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
<p>7) Dermoscopy use decreases my need to refer some skin lesions.</p>	<ul style="list-style-type: none"> <input type="radio"/> Strongly disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree