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## Nurse Practitioner Student Knowledge and Attitudes Towards Skin Cancer Assessments

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NURSE PRACTITIONER STUDENT KNOWLEDGE AND ATTITUDES  
TOWARDS SKIN CANCER ASSESSMENTS

by

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A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Nursing  
in the College of Nursing  
and in The Burnett Honors College  
at the University of Central Florida  
Orlando, Florida

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## ABSTRACT

**Background:** Skin cancer is the most commonly diagnosed cancer each year in the United States. With skin cancer and the demand for nurse practitioners (NPs) in primary care both on the rise, an accurate assessment of how well NP students are being prepared to perform skin cancer assessments is needed. Patient outcomes are directly linked to early detection and treatment which is essential for all types of skin cancer, especially melanoma. Nurse Practitioners need to be able to recognize the early stages of malignancy versus benign skin lesions and perform accurate skin examinations. The ability to assess practitioners' knowledge while they are still students will give us a better understanding of how well they are being prepared to perform skin cancer assessments in primary practice. This information will inform educators where improvement in skin cancer education is needed.

**Methodology:** Following IRB approval, nurse practitioner students enrolled in a gerontology course fall 2016 were invited to participate in this exploratory, descriptive study. Twenty NP students completed the Knowledge, Attitudes and Practice of Skin Cancer Assessments (KAP-SCA) survey. The survey has 80 questions about lesion identification, knowledge of general skin facts, education in NP Program, and knowledge, attitudes, and confidence levels during skin care assessments. Descriptive statistics (frequencies and percentages) were used to analyze demographics. Total scores and subscale scores for the KAP-SCA instrument were examined with descriptive statistics. Spearman's Rho statistics were used for correlations among knowledge, attitude, training and practice.

**Results:** The typical NP student was female, age 31 years and enrolled in the family nurse practitioner program at UCF. The majority of NP students had an average knowledge score

for general skin cancer knowledge and photo lesion identification questions. However, the majority (70%) of NP students did not agree that the dermatology training they received in their NP program prepared them for practice.

**Discussion:** Most NP students do not feel confident performing skin cancer assessments and basic dermatology procedures upon graduation. Most NP students had a difficult time differentiating between benign and malignant lesions, and would refer the patient to a specialist due to their lack of knowledge or confidence in diagnosis.

**Conclusions:** Information obtained from the KAP-SCA survey demonstrated that the majority of NP students lacked confidence performing skin cancer assessments and had difficulty recognizing if a lesion was benign or malignant. This information can be helpful in informing educators on where improvement in skin cancer education is needed in NP programs.

## **DEDICATION**

For my parents and family, thank you for the love and support.  
For my professors and mentors, thank you for sharing your knowledge and wisdom to help guide me throughout my undergraduate experience.

## **ACKNOWLEDGEMENTS**

I would like to acknowledge College of Nursing for providing me with the excellent nursing education, as well as introducing me to the Honors in the Major Program which has allowed me to take on this project and conduct original research.

A special thanks to the College of Nursing Honors-In-The-Major Grant Program for their funding.

I also acknowledge Burnett Honors College for their guidance as I completed this project. I am grateful for vast amount of learning and research opportunities you have provided.

I am extremely thankful for my insightful committee members, Dr. Dawn Turnage, Dr. David Weinstein and Dr. Victoria Loerzel.

Dr. Turnage, thank you for introducing me to research and giving me the foundation I needed to complete my study. Thank you for being a source of positive encouragement throughout this journey.

Dr. Weinstein, thank you for your expertise in reviewing my content to ensure that it was accurate and providing me with excellent feedback. Your dermatology knowledge was invaluable to me throughout this process.

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## TABLE OF CONTENTS

INTRODUCTION .....	1
Statement of the Problem.....	1
PUPOSE OF STUDY .....	6
Research Aims .....	6
METHODS AND PROCEDURES.....	7
Design .....	7
Subjects .....	7
Procedures .....	7
Instruments.....	8
Table 1: KAP-SCA Blueprint .....	11
Data Analysis .....	11
FINDINGS .....	12
Sample Characteristics.....	12
Table 2: Demographics Data (n=20) .....	12
Results of Knowledge Items .....	13
Table 3: Lesion Identification and Action .....	14
Results of Attitudes Items .....	17
Results of Practice Items.....	17
Relationship between variables.....	18
Reliability.....	18
DISCUSSION OF FINDINGS .....	19
Knowledge .....	19
Attitudes.....	22
Practice.....	23
NURSING IMPLICATIONS.....	24
LIMITATIONS .....	25
SUMMARY .....	26
APPENDIX A: IRB APPROVAL LETTER .....	27
APPENDIX B: PERMISSION TO RECRUIT .....	29
APPENDIX C: INFORMED CONSENT DOCUMENT .....	31
APPENDIX D: PERMISSION TO USE SURVEY .....	34
APPENDIX E: KAP-SCA INSTRUMENT .....	36
REFERENCES .....	62



## LIST OF TABLES

Table 1: KAP-SCA Blueprint .....	11
Table 2: Demographics Data (n=20) .....	12
Table 3: Lesion Identification and Action .....	14

# INTRODUCTION

## Statement of the Problem

Skin cancer is the most commonly diagnosed cancer each year in the United States (U.S.). It is estimated that one in every five Americans will develop skin cancer during their lifetime (American Academy of Dermatology, 2010). Each year more than 5.4 million cases of non-melanoma skin cancer are diagnosed in the U.S. (American Cancer Society, 2012). It is estimated that 144,860 new cases of melanoma and melanoma in situ will be diagnosed in 2016; of these, there will be 76,380 and 68,480 cases respectively resulting in approximately 10,130 deaths (American Cancer Society, 2016; Siegel, R., Miller, K., Jemal, A., 2016). Patient outcomes are directly linked to early detection and treatment, which are essential for all types of skin cancer, especially melanoma. Nurse Practitioners (NPs) in primary care play a very important role in early detection of non-melanoma and melanoma skin cancer. According to American Association of Nurse Practitioners there are over 222,000 nurse practitioners in the U.S and 83.4% are certified in an area of primary care (2016). With skin cancer and the demand for NPs in primary care both on the rise we need an accurate assessment of how well NP students are being prepared to perform skin cancer assessments. It is necessary to have qualified NPs who are both able to recognize the early stages of malignancy versus benign skin lesions and to perform accurate skin examinations.

The three major types of skin cancer are basal cell carcinoma (BCC), squamous cell carcinoma (SCC), and melanoma. Both BCC and SCC can be grouped into a category called non-melanoma skin cancers (NMSC) and are the two most common types of skin cancer. Both of these NMSCs are highly curable and have an excellent prognosis when detected early and

removed as recommended (American Cancer Society, 2016; Neville, J., Welch, E., Leffell, D., 2007). Melanoma on the other hand, accounts for less than one percent of skin cancer cases but results in the majority of deaths from skin cancer (American Cancer Society, 2016). However, according to American Academy of Dermatology, melanoma when caught early and treated properly has a cure rate of nearly one hundred percent (n.d.).

Basal cell carcinoma is the most common type of skin cancer. It grows slowly and is usually located on sun-exposed areas such as the head and neck. BCC usually appears as a translucent, pearly papule (smooth, raised bump) on the skin. It is rare for BCC to metastasize, although if left untreated it can invade important structures such as the eye, or invade bone or underlying tissue (American Cancer Society, 2016). Unfortunately, BCC has the possibility of returning if not removed completely, and people who have developed BCC have an increased chance of recurrence of BCC in the future in other areas.

Squamous cell carcinoma is the second most common type of skin cancer. It grows faster than BCC and usually appears on the same areas that are heavily sun-exposed such as: face, ears, head, neck, lips and back of hands. Squamous cell carcinoma is usually described as a red scaling bump and can ulcerate and bleed if not treated promptly. Usually SCC grows into the deeper layers of skin and has a higher chance to metastasize than BCC. It is critical that SCC is detected and treated early because if left untreated SCC can penetrate the underlying tissue which sometimes leads to treatment-related disfigurement such as the loss of an ear, nose or eye. In a worst-case scenario SCC can metastasize to other organs and distant tissue which then becomes life-threatening (Skin Cancer Foundation, n.d.).

Melanoma is one of the deadliest types of skin cancer, although if recognized early melanoma is almost always curable. Melanoma has similar features and qualities of a mole, and sometimes can develop from a mole. The usual description of melanoma is black and brown, but they can also be skin-colored. The ABCDE (Asymmetry, Border, Color, Diameter, and Evolving) mnemonic is often used to identify early signs of melanoma, and patients should be notified to seek immediate treatment. Melanoma most commonly occurs in adults, but it is becoming more prevalent in teens and young adults from age 15-29 years. If not treated early, melanoma can metastasize and prove fatal. According to a comprehensive meta-analysis, a contributing factor in many cases of melanoma is repeated and intense UV exposure resulting in sunburn and blisters (Dennis et al., 2008).

According to the American Cancer Society (ACS), skin cancer screenings could potentially be the foremost way to combat the increasing prevalence of skin cancer (1998). Ultraviolet light exposure from sunlight is the most common cause of skin cancer (American Cancer Society, 2015). Most of the rising incidence of skin cancer is likely due to changing behaviors and neglecting primary prevention. Life expectancy has been increasing, which also could contribute to skin cancer prevalence due to increased exposure time. Studies have shown that people who use tanning beds have an increased risk of skin cancer, and the risk is even higher if you start indoor tanning at a younger age (American Cancer Society, 2015). With increasing life expectancy and changing behaviors, primary and secondary prevention becomes even more crucial than ever.

Primary prevention strategies to decrease the risk of skin cancer include limiting sun exposure and utilizing basic sun protection. (Ferrini, R., Perlman, M., Hill, L., 1998; Hill, L. &

Ferrini, R., 1998). The Centers for Disease Control and Prevention recommend wearing protective clothing, staying in the shade, wearing broad spectrum sunscreen and sunglasses that protect against both Ultra Violet A (UVA) and Ultra Violet B (UVB) rays (Centers for Disease Control and Prevention, 2016). The NPs primary prevention care responsibilities are to provide evidence-based counseling and educational interventions. This will hopefully help patients avoid developing skin cancer and health problems in the first place.

Secondary prevention for skin cancer is the advice that NPs give about self-examination of the skin and the process of giving a professional skin exam. The primary purpose of secondary prevention is early detection. Although skin exams do not slow the progression of skin cancer, they allow for early detection and treatment. Self-examination provides an opportunity for the patient to notice a suspicious mole or abnormal skin features that may represent early skin cancer. The American Academy of Dermatology recommends everyone to perform self-head-to-toe skin exams frequently and to receive a skin exam from a doctor (n.d). After seeing a dermatologist, individual recommendations for how often skin cancer exams will be made are based on the patient's risk factors, skin type, family history and history of sun exposure (American Academy of Dermatology, n.d).

There are few studies that have examined NP or NP students' knowledge about skin cancer and their attitudes towards performing skin cancer assessments. The literature available on NPs shows a low level of knowledge related to skin cancer assessments. A systematic review of advanced practice nurses (APN) demonstrates that APNs' ability to identify and refer suspicious and benign lesions was inconsistent, although it improved after training (Loescher, L., Harris, J., & Curiel-Lewandrowski, C., 2011). Studies of undergraduate nursing students' have

focused on their knowledge level and behaviors related to protection against the sun and skin cancer (Kuhrik et al., 2011; Yilmaz et al., 2015). In addition, the study by Kuhrik introduced a human patient stimulation lab for baccalaureate nursing students that presented “moulage-like” lesions (mock injuries for training purposes) which were evaluated by the students. Students were then counseled on skin cancer prevention and early detection principles. The intervention from this study was successfully integrated into a physical assessment course and educators on the research team were confident that with further practice competency in physical assessment would improve, resulting in improving prevention and early detection of skin cancer (Kuhrik et al., 2011).

These studies all showed that additional training was helpful to students and advance practice nurses. However, these studies did not assess the knowledge of NP students, who will be responsible for assessing skin once they are in practice. Without this, we do not know if knowledge about skin cancer was taught and forgotten or if NP students lack a solid foundation upon which to conduct skin assessments in the first place. The ability to assess their knowledge while they are still students will give us a better understanding of how well they are being prepared to perform skin cancer assessments. This information will inform educators where improvement in skin cancer education is needed.

## **PURPOSE OF STUDY**

The purpose of this study was to examine Nurse Practitioner (NP) student knowledge and attitudes towards skin cancer and skin cancer assessments.

### **Research Aims**

1. Explore NP students' knowledge about skin cancer.
2. Explore NP students' attitudes towards performing skin cancer assessments.
3. Explore NP students' confidence level in performing skin cancer assessments.
4. Explore NP students' ability to recognizing various types of skin cancer.
5. Explore NP students' ability to recommend treatment for various types of skin cancer.
6. Explore the relationship between NP knowledge and attitudes towards skin cancer assessments.

## **METHODS AND PROCEDURES**

### **Design**

This study used an exploratory, descriptive design. A survey developed by Dr. Debra Shelby, PhD, DNP was used to measure the knowledge, attitudes, practice, education, confidence and the role of NPs regarding skin cancer assessments. The research was being completed through the Honors in the Major program under the supervision of Dr. Loerzel.

This research was conducted on NP students enrolled in the Gerontology course in late October after the students had received content on dermatology and completed a Health Assessment course in a prior semester which reviewed skin assessments.

### **Subjects**

The subjects in the study were graduate nurse practitioner students enrolled in the Gerontology course in fall 2016 at the University of Central Florida (UCF).

Participants in the study were included if at least 18 years of age; a graduate nursing student; and currently enrolled in the gerontology course as an NP student at the University of Central Florida.

Students were excluded if they were in the undergraduate BSN program and other MSN programs at the UCF College of Nursing.

### **Procedures**

This study was approved by the University of Central Florida's Institutional Review Board (appendix A). Permission to recruit participants was obtained from the Gerontology course instructor, Dr. Angela Ritten (see appendix B). This study was not part of the Gerontology course curriculum; the class only served as the recruitment pool.



Potential participants were informed about the study during a live class. During the live class, the PI (RW) explained the purpose of the study and study requirements. It was emphasized that the study was not part of the course and a small incentive would be provided as a “thank you” for their time. Potential participants were encouraged to ask questions. The start date of the study was also discussed. After the study was introduced, participants were invited to take part in this study through webcourses.

The PI’s faculty advisor, Dr. Loerzel was added to the webcourses class section in order to send out an email with a link to the survey (on Qualtrics) for the participants. The link took potential participants to the survey which included an informed consent document. Participants answered questions on the survey to indicate their consent. At the end of the survey, participants had the opportunity to provide a unique identifier so they could receive a \$5 gift card to Starbucks. This provided confidentiality to participants. Participants were asked to pick up their gift cards, labeled with their unique identifier, at the College of Nursing’s front desk. Participation remained confidential and the course instructor was not given participants names or the unique identifiers. At the end of the study, the unique identifiers were removed from the data by the PI prior to downloading the data for analysis. Data and results are kept in a password locked file on PIs and Dr. Loerzel’s laptop computers.

## **Instruments**

The survey (total items: 91) consisted of demographic questions and the Knowledge, Attitudes and Practice of Skin Cancer Assessments (KAP-SCA) survey. The demographic survey included questions about gender, age, race, ethnicity, NP track, personal history of skin cancer and family history of skin cancer.

The KAP-SCA survey was originally created by Dr. Debra Shelby (see appendix D for the permission letter) and is designed to measure the knowledge, attitudes, practice, education, confidence and the role of NPs regarding skin cancer assessments. The survey has 80 questions about lesion identification, knowledge on general skin facts, education in NP program, and knowledge, attitudes, and confidence level during skin care assessments (Shelby, 2014). See table 1 for a breakdown of the survey questions.

The skin cancer knowledge of the NP students was assessed in two different parts of the KAP-SCA survey. First, it was assessed by using twenty photos for lesion identification which also included choices of treatment options such as: biopsy, cryotherapy, refer to specialist, or benign lesion (no treatment necessary). For the lesion identification knowledge questions, scores range from 0 to 20 points. The interpretation of scores for photo identification items include: 0-7 points= deficient knowledge, 8-14 points=average knowledge, and 15-20 points=proficient knowledge. A group of content experts were involved to obtain the content validity index, and the developer of the original instrument set the interpretation of the scores.

Second, thirteen general skin cancer knowledge questions that measure comprehensive knowledge relating to non-melanoma and melanoma skin cancer are included. Possible scores range from 0 to 13 points. The interpretation of scores for the general knowledge items include: deficient knowledge (0-4 points), average knowledge (5-9 points) and proficient knowledge (10-13 points). The original survey had 14 questions, however, we removed one of the questions from the survey because one of the thesis committee members found the answer to be inaccurate.

The attitudes subscale consists of a total of twenty questions looking at NP attitudes and confidence in performing skin cancer examinations and the dermatology education the

participants received at their program. These questions use a Likert scale format: none (0), strongly disagree (1), disagree (2), agree (3) and strongly agree (4). The total possible scores of the attitudes section range from 0-80.

The practice subscale consists of a total of twenty questions relating to NP students' practice in regard to skin cancer examinations, prevention, education and procedures. These questions also use a Likert scale format: none (0), strongly disagree (1), disagree (2), agree (3) and strongly agree (4). The possible total score of the practice section range from 0-80.

The tool has support for validity and reliability. The subscales were evaluated by content validity index ranged from .90 to .95. The construct validity was assessed by exploratory factor analysis and showed the existence of three underlying factors: NP role in practice, confidence in practice and confidence relating to education. The Cronbach's alpha was highest for the practice subscale ( $\alpha=.89$ ) and lowest for the knowledge subscales ( $\alpha=.50$ ). According to Shelby, although .50 is considered a low score, it does not necessarily infer that the scale is inadequate, but could instead be due to the measure of multiple levels of knowledge associated with benign lesions, non-melanoma skin cancer and melanoma (Shelby, 2014).

Table 1: KAP-SCA Blueprint		
Topic	Subscale	Number of items
Knowledge	Non-melanoma Skin Cancers and Melanoma Skin Cancers	20
	Education Sources for Dermatology Knowledge	6
	Knowledge of General Skin Cancer Facts	13
Attitudes	NP's attitudes towards their role in skin cancer detection	4
	NP's confidence regarding performance of skin cancer examination	3
	NP's confidence of diagnostic skills, performance of procedures, or other aspects of dermatology care	7
	NP's attitudes towards patient education regarding skin cancer prevention	2
	NP's attitudes toward the dermatology education they received during their NP program or other educational program	4
Practice	Identify the NP's practice regarding skin cancer examinations	5
	Identify NP practice regarding pathology	4
	Identify dermatology procedures performed by the NP	6
	Identify NP practice to treat skin cancers	3
	Identify NP's practice regarding skin cancer prevention and education	2
Total		79
Note: this table was adapted from: Shelby, D. (2014, January). Knowledge, Attitudes and Practice of Primary Care Nurse Practitioners Regarding Skin Cancer Assessments: Validity and Reliability of a New Instrument. <i>Knowledge, Attitudes &amp; Practice of Primary Care Nurse Practitioners Regarding Skin Cancer Assessments</i> , 125 p.		

## Data Analysis

The study used descriptive statistics (frequencies and percentages) to analyze the demographics and the Total score and subscale scores for the KAP-SCA instrument. Spearman's Rho was used to examine relationships between knowledge, attitudes, and practice.

## FINDINGS

### Sample Characteristics

Nurse practitioner students enrolled in the Gerontology course during the Fall 2016 semester were asked to participate. There were a total of 34 NP students enrolled in the course, and 20 NP students participated and completed the KAP-SCA survey.

The majority of participants were female (85%), family track NP students (85%) and Caucasian (90%). The age of the participants ranged from 25-54 years old. The majority of the sample reported no personal history (95%) or family history of skin cancer (55%). The majority of participants perform self-skin exams (70%) and perform skin exams in clinical (70%). For all the participants who perform self-skin exams, 30% perform self-skin exams at least once a month, 30% perform self-skin exams at least every six months and 15% perform self-skin exams once a year. Only 30% of participants receive an annual professional skin examination. For all the participants who perform skin exams in clinical, 20% perform skin exams every clinical, 25% perform skin exams every other clinical, 25% perform skin exams only once and 30% have never performed skin exams in clinical.

Table 2: Demographics Data (N=20)		
		% (n)
Gender	Male	15% (n=3)
	Female	85% (n=17)
Age	25-34	80% (n=16)
	35-44	15% (n=3)
	45-54	5% (n=1)
Race	Caucasian	90% (n=18)
	AA/Black	0% (n=0)
	Asian	10% (n=2)
	Other	0% (n=0)
Ethnicity	Hispanic	10% (n=2)

	Non-Hispanic	90% (n=18)
NP track	Adult Family Other	15% (n=3) 85% (n=17) 0% (n=0)
Personal History of skin cancer	BCC SCC Melanoma Other None	0% (n=0) 0% (n=0) 0% (n=0) 5% (n=1) 95% (n=19)
Family history of skin cancer	BCC SCC Melanoma Other None	20% (n=4) 15% (n=3) 15% (n=3) 5% (n=1) 45% (n=9)
Do you perform self-skin exams?	Yes No	70% (n=14) 30% (n=6)
How often do you perform self-skin exams?	At least once a month At least every six months Once a year Never	30% (n=6) 30% (n=6) 15% (n=3) 25% (n=5)
Do you get an annual professional skin examination?	Yes No	30% (n=6) 70% (n=14)
Do you perform skin exams in clinical?	Yes No	70% (n=14) 30% (n=6)
How often do you perform skin exams in clinical?	Every clinical Every other clinical Only once Never	20% (n=4) 25% (n=5) 25% (n=5) 30% (n=6)

## Knowledge

The total mean score for the lesion identification knowledge subscale was 9.65 out of 20 possible points (range 6-14). This was average knowledge (8-14 points=average knowledge).

The majority (51.75%) of the participants were unable to correctly recognize if a lesion was likely benign, precancerous, non-melanoma skin cancer or melanoma skin cancer. The participants correctly identified noncancerous lesions 52% of the time and correctly identified

melanoma lesions 51.6% of the time. The participants correctly identified precancerous lesions 40% of the time and non-melanoma cancerous lesions 42.9% of the time.

When asked about the appropriate action to take for each lesion overall, the majority (52.3%) of the participants indicated they would “refer to a specialist”. This option was the most popular choice regardless of the type of lesion. Participants selected “refer to a specialist” for non-melanoma cancerous lesions (62.85%), melanoma lesions (63.3%), precancerous lesions (45%), and benign lesions (41.1%).

Each lesion type also has a possible “worst” action associated with it. Table 3 lists the answers for the photo identification and action questions. The table includes the type of lesion in each photo, the number of participants who correctly identified the lesion, the actions he or she would take, and the worst possible action for that type of lesion.

Table 3: Lesion Identification and Action				
Photo #	Lesion Type	Answer: Correct Incorrect n(%)	Actions: n(%)	Worst Actions: n(%)
1	Precancerous	8 (40%) 12 (60%)	Biopsy: 4 (20%) Cryotherapy: 1 (5%) Refer to a Specialist: 9 (45%) No Treatment: 6 (30%)	No Treatment: 6 (30%)
2	Non-melanoma Skin Cancer	9 (45%) 11 (55%)	Biopsy: 5 (25%) Cryotherapy: 0 (0%) Refer to a Specialist: 12 (60%) No Treatment: 3 (15%)	No Treatment: 3 (15%)
3	Benign lesion	5 (25%) 15 (75%)	Biopsy: 3 (15%) Cryotherapy: 0 (0%) Refer to a Specialist: 11 (55%) No Treatment: 6 (30%)	Biopsy: 3 (15%)
4	Benign lesion	5 (25%) 15 (75%)	Biopsy: 4 (20%) Cryotherapy: 5 (25%)	Biopsy: 4 (20%)

			Refer to a Specialist: 11 (55%) No Treatment: 0 (0%)	
5	Benign lesion	9 (45%) 11 (55%)	Biopsy: 5 (25%) Cryotherapy: 1 (5%) Refer to a Specialist: 7 (35%) No Treatment: 7 (35%)	Biopsy: 5 (25%)
6	Melanoma	10 (50%) 10 (50%)	Biopsy: 2 (10%) Cryotherapy: 0 (0%) Refer to a Specialist: 13 (65%) No Treatment: 5 (25%)	No Treatment: 5 (25%) Cryotherapy: 0 (0%)
7	Non-melanoma Skin Cancer	13 (65%) 7 (35%)	Biopsy: 3 (15%) Cryotherapy: 0 (0%) Refer to a Specialist: 17 (85%) No Treatment: 0 (0%)	No Treatment: 0 (0%)
8	Benign lesion	15 (75%) 5 (25%)	Biopsy: 4 (20%) Cryotherapy: 4 (20%) Refer to a Specialist: 5 (25%) No Treatment: 7 (35%)	Biopsy: 4 (20%)
9	Non-melanoma Skin Cancer	11 (55%) 9 (45%)	Biopsy: 4 (20%) Cryotherapy: 0 (0%) Refer to a Specialist: 15 (75%) No Treatment: 1 (5%)	No Treatment: 1 (5%)
10	Non-melanoma Skin Cancer	8 (40%) 12 (60%)	Biopsy: 2 (10%) Cryotherapy: 2 (10%) Refer to a Specialist: 12 (60%) No Treatment: 4 (20%)	No Treatment: 4 (20%)
11	Melanoma	8 (40%) 12 (60%)	Biopsy: 0 (0%) Cryotherapy: 0 (0%) Refer to a Specialist: 10 (50%) No Treatment: 10 (50%)	No Treatment: 10 (50%) Cryotherapy: 0 (0%)
12	Non-melanoma Skin Cancer	4 (20%) 16 (80%)	Biopsy: 4 (20%) Cryotherapy: 0 (0%) Refer to a Specialist: 7 (35%) No Treatment: 9 (45%)	No Treatment: 9 (45%)
13	Benign lesion	16 (80%) 4 (20%)	Biopsy: 0 (0%) Cryotherapy: 0 (0%) Refer to a Specialist: 6 (30%) No Treatment: 14 (70%)	Biopsy: 0 (0%)
14	Melanoma	13 (65%) 7 (35%)	Biopsy: 2 (10%) Cryotherapy: 0 (0%) Refer to a Specialist: 15 (75%) No Treatment: 3 (15%)	No Treatment: 3 (15%) Cryotherapy: 0 (0%)
15	Benign lesion	16 (80%) 4 (20%)	Biopsy: 1 (5%) Cryotherapy: 0 (0%) Refer to a Specialist: 4 (20%)	Biopsy: 1 (5%)



			No Treatment: 15 (75%)	
16	Non-melanoma Skin Cancer	3 (15%) 17 (85%)	Biopsy: 2 (10%) Cryotherapy: 1 (5%) Refer to a Specialist: 8 (40%) No Treatment: 9 (45%)	No Treatment: 9 (45%)
17	Benign lesion	3 (15%) 17 (85%)	Biopsy: 4 (20%) Cryotherapy: 2 (10%) Refer to a Specialist: 12 (60%) No Treatment: 2 (10%)	Biopsy: 4 (20%)
18	Benign lesion	17 (85%) 3 (15%)	Biopsy: 0 (0%) Cryotherapy: 0 (0%) Refer to a Specialist: 8 (40%) No Treatment: 12 (60%)	Biopsy: 0 (0%)
19	Benign lesion	8 (40%) 12 (60%)	Biopsy: 0 (0%) Cryotherapy: 6 (30%) Refer to a Specialist: 10 (50%) No Treatment: 4 (20%)	Biopsy: 0 (0%)
20	Non-melanoma Skin Cancer	12 (60%) 8 (40%)	Biopsy: 3 (15%) Cryotherapy: 0 (0%) Refer to a Specialist: 17 (85%) No Treatment: 0 (0%)	No Treatment: 0 (0%)

The mean general knowledge score of the NP students was 6.4 (range 3-9) out of a possible 13 points. This was average knowledge (5-9 points= average knowledge). The participants seemed most knowledgeable about risk factors for melanoma. The majority (90%) of the participants were able differentiate between risk factors for melanoma and benign factors. The majority (75%) of the participants identified the most common skin cancer, proper biopsy techniques for a pigmented lesion and proper indications for a sentinel lymph node biopsy.

The participants were least knowledgeable about different types of melanoma. Only 5% of the participants correctly identified that Merkel is not included in the types of melanoma. However, only 15% of the participants were knowledgeable on determining treatment for

melanoma. Ten percent of the participants were knowledgeable on risk factors for squamous cell carcinoma.

### **Attitudes**

The total scores for the attitude subscale was 48.5 out of 80 points with a range of 32-66 points. The NP students' attitudes in regards to performing skin cancer assessments showed that the majority of participants agree it is vital to look for skin cancers when examining any patient (95%), and that NPs are responsible for knowing how to provide a full body skin cancer exam (95%). All participants (100%) agreed that it is their responsibility to educate patients on skin cancer prevention and encourage annual exams. All participants (100%) agreed that lack of time is a barrier to performing full body skin exams.

The majority (70%) of NP students did not agree that the dermatology training they received in their NP program prepared them for practice. Only 50% of NP students stated they received training or education on skin biopsies and 45% reported receiving training on cryotherapy.

Confidence in performing skin cancer assessments and procedures was low. The majority (90%) of the participants agreed that they are afraid that they might miss a skin cancer so they chose to refer out a dermatology specialist. Only two of the participants (10%) felt confident performing skin assessments. None of the participants felt confident performing biopsies and cryotherapy with the education they received in their NP program.

### **Practice**

The total scores for the practice subscale was 28.3 out of 80, and the range was 8-51. The results for the practice subscale demonstrated that the majority (80%) would refer patients to a

dermatology specialist for skin cancer examinations if they are unable to perform a skin assessment. Most NP students (90%) typically educated patients on sun protection. The lowest scores were seen in performing dermatologic procedures. None (100%) of NP students performed excisional biopsies for lesions suspicious for melanoma. They also did not perform excisions, cryotherapy, or electrodesiccation/curettage to treat non-melanoma skin cancer.

### **Relationships between variables**

Correlations between the total subscale scores indicated a significant correlation between the total training sum score and the total practice sum score,  $r(18) = .485$ ,  $p < .05$ . No other correlations were significant.

### **Reliability**

In this study, Cronbach's alpha was calculated for the whole instrument (.868) indicating high reliability. However, reliability for the photo lesion identification scale (.364) and general skin cancer knowledge scale (.174) were low. The reason for this is unclear. It could indicate that there are multiple levels of knowledge associated with lesion identification and general skin cancer knowledge in this sample.

## **DISCUSSION OF FINDINGS**

This exploratory study examined NP students' ability to recognize benign and malignant lesions, treatment actions by lesions, general skin cancer knowledge, and attitudes and practice towards performing skin cancer assessments. Results indicate that NP students lacked confidence in performing skin cancer assessments and had difficulty recognizing if a lesion was benign or malignant. There was also a great deal of variability on how to treat each lesion. Participants also did not feel confident performing cryotherapy or biopsies for skin lesions. The participants had an average knowledge score on general skin cancer knowledge.

### **Knowledge**

Two types of knowledge were assessed. General skin cancer knowledge and knowledge related to what skin lesions looked like and what to do about them. Overall, knowledge was average. The results for the lesion identification knowledge questions showed that it was challenging for the NP students to identify different types of skin lesions. In this study the lowest scores were seen in precancerous and the highest scores were seen in benign lesions. These results are different from the parent study where lowest scores were seen with benign lesions and the highest scores were seen with identification of melanoma lesions (Shelby, 2014). In both studies the findings demonstrated that participants found it difficult to differentiate between benign and malignant lesions. The results showed that around half of the time participants correctly identified benign lesions. Both studies also showed that less than half of the time participants were unable to correctly identify non-melanoma skin cancer. This demonstrates that both primary care nurse practitioners in practice and NP students have difficulty recognizing skin cancer abnormalities, thus indicating that educational programs may benefit NP students by

focusing more time or/and emphasis on distinguishing between malignant and benign skin lesions.

When evaluating the wrong answers for benign lesions for both studies they are consistent in the fact that for most pigmented benign lesions participants chose to select melanoma as their answer (Shelby, 2014). This may suggest an overall guess due to the participants focusing their answers based off of the lesions general pigmentation.

The lesion identification knowledge questions also had a follow up question as to what is the best treatment option based on of their answer to the lesion identification. For melanoma lesions the worst action was considered to be both no treatment and cryotherapy, as both are equally poor options. This is because they both delay early detection and proper treatment. For benign lesions, typically biopsy is the worst treatment. For precancerous and non-melanoma skin cancer no treatment was considered the worst action due to delaying early identification and appropriate treatment. The participants selected “refer to a specialist” as their preferred choice the majority of the time, which is consistent with the parent study. According to the parent study, regardless of the diagnosis the majority of the participants selected “refer to a specialist” (Shelby, 2014). This could be from either a lack of confidence or inexperience in recognizing/diagnosing skin lesions. Diagnosing skin issues takes practice and skill, more to it than ABCDE’s, and it also takes time to become competent in identifying different skin lesions correctly. Referring to a specialist may make sense since NPs may not want to miss things that are important or they are uncomfortable identify. This may be because that they have not had enough experience to confidently identify certain skin lesions. Referring to a specialist when unconfident if a skin lesion is cancerous or not shows that NPs and NP students practice safe

care (Swan, Ferguson, Chang, Larson, & Smaldone, 2015). Nurse Practitioners may choose to refer out and err on the side of caution due to fears of missing a diagnosis. It is very common in all primary care settings for a patient to be referred to a specialist if that health care provider feels that it is out of their expertise and believes it is necessary in order to provide safe care (Solomon, 2009). However, if NP students and practitioners were more familiar with recognizing benign vs malignant lesions this could reduce the amount of unnecessary and expensive dermatology referrals.

The comprehensive results for the general skin cancer knowledge questions were average, which was consistent with the parent study (Shelby, 2014). It is unknown how NP students at other schools would score. However, unless a NP program has a specialized track in dermatology, results are probably similar. The lowest scores were seen with questions relating to risk factors for squamous cell carcinoma, which was consistent with the parent study (Shelby, 2014). This could suggest that education on risk factors for squamous cell carcinoma should be reinforced.

It could be possible skin cancer gets lost in the curriculum for both faculty and students. It could be that the NP students do not see skin cancer as a priority compared to more acute issues. If that was the case, NP programs may be covering the necessary dermatology topics but the NP students do not find it interesting or important enough to develop a strong foundation on this topic. It may also be that it takes years of training and experience to develop expertise in lesion identification. Nurse practitioners should be trained holistically to provide preventative and primary care to patients. With sun exposure and the increase risk of skin cancer rising, it is

evident that this is an area where nurse practitioners could help many patients through providing primary and secondary prevention.

### **Attitudes**

Most NP students reported that they lacked of confidence when performing skin cancer assessments. This finding was also consistent with the parent study (Shelby, 2014). Both studies found that participants felt there was a deficiency of dermatology education in their NP program and felt unprepared for practice in regards to dermatology training (Shelby, 2014). Both studies were consistent in that participants agreed it is their responsibility to be able to perform a skin cancer assessment, lack of time is a barrier when performing skin cancer exams and it is their responsibility to provide education to patients about skin cancer (Shelby, 2014). However in this study/survey the term skin exam was not defined, so it is unclear if respondents were doing full skin exams or only examining arms and legs.

Other studies have also looked at practitioners' attitudes/confidence towards performing skin cancer assessments. A study conducted at Radboud University Medical Center assessed the knowledge, attitudes and skills of 268 general practitioners (Van Rijsingen et al., 2014). The results showed that over 50% of general practitioners felt they needed additional training in skin cancer and would be willing to extend their role if further education in skin cancer knowledge and recognition was implemented. Another study was completed with 223 fourth-year medical students at Boston University. Among the students, 52% considered themselves unskilled in performing skin cancer assessments, 28% had never observed a skin cancer assessment, 40% had received no training and 35% had never practiced skin cancer assessments (Geller et al., 2002).

From this data, all practitioners would benefit from more knowledge and education in dermatology/skin cancer.

In this study, none of the NP students felt confident performing biopsies and cryotherapy with the education received at their NP program. The majority of the NPs in the parent study also did not feel confident in performing biopsies and cryotherapy procedures (Shelby, 2014). However, 90% of the NP students would feel confident performing biopsies if they had the formal training. The NP students did not feel confident performing these procedures because it is not part of the program. However, both studies showed that NPs and NP students are interested in performing biopsies if they had the formal training. Implementing education and hands-on experience performing these procedures could increase NP students' confidence.

## **Practice**

Average knowledge and lack of confidence can have a direct impact on practice related to skin cancer assessments. The results suggest that the majority of the NP students are comfortable educating patients on basic preventive measures such as sun protection; this finding is consistent with the parent study (Shelby, 2014). This is most likely because much of the NPs' training is focused on health promotion, disease prevention and providing holistic care.

In both studies, NPs and NP students had the lowest scores in performing dermatology procedures. This is likely because participants have not been trained to perform basic dermatology procedures such as biopsies and cryotherapy as part of their coursework or clinical practice.



## **NURSING IMPLICATIONS**

This study has multiple implications for nursing. In education, multiple opportunities for improving NP students' knowledge about skin cancer exist. Given that skin cancer is the most common cancer in the U.S., Nurse Practitioner primary care focused programs should emphasize dermatology education and supplement it with hands on experiences such as a dermatology clinical rotation, simulations or workshops. These workshops could include training in basic dermatology procedures such as biopsies and cryotherapy. This will help facilitate learning and increase confidence in performing skin cancer assessments and procedures. Given that skin cancer rates are rising as well as younger adults being diagnosed with skin cancer earlier, another implication could be to focus on primary prevention. This could include emphasizing the importance of sun protective behaviors for all patients, especially the younger population.

There is a lack of dermatology studies in the medical literature that focus on nurse practitioners. The sample in this study was small. Future studies should be focused on larger and more diverse populations of NPs and NP students. More research needs to be conducted using the KAP-SCA tool. The reliability of the Knowledge subscales is low, thus more research is needed to further evaluate the reliability of the instrument.

## **LIMITATIONS**

This study had several limitations. First, this study used convenience sampling, which only represents the NP students locally at UCF. Results may differ at another NP program. However, the UCF program may be typical of other NP programs, at least in Florida. Second, some demographic groups were underrepresented in this study such as: male and adult NP students. This may affect the generalizability of the results. Future studies should make more of an effort to be more inclusive and tailor recruitment strategies to reach these groups. Third, some of the questions in the survey were directed towards NPs who are in practice. Knowledge may have been low due to students' lack of experience or exposure to skin issues in clinical. Finally, limitations could have been present in the survey itself. The pictures used for the photo identification questions may not have been clear enough for participants to identify or differentiate lesions or they could have been ambiguous from the angle at which the picture was taken. Increasing the quality of photos and providing multiple angles of the same lesions potentially could decrease the limitations from the survey.

## **SUMMARY**

Skin cancer is on the rise. In this study NP students struggled to differentiate between benign and malignant skin lesions. Nurse practitioner students also lacked confidence when conducting skin cancer assessments and basic dermatology procedures. This study demonstrates the need to put more emphasis on skin cancer assessments in NP curriculums. Nurse practitioners are in a prime position on the front line to identify and diagnose skin issues that need further treatment or specialist care. Educators should reexamine how dermatology education is presented and consider placing more importance on basic dermatology education, procedures and skin cancer recognition. This could increase NP students' knowledge and confidence level which would have a direct impact on patient outcomes.

**APPENDIX A: IRB APPROVAL LETTER**  
APPENDIX A  
IRB APPROVAL LETTER



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**  
**FWA00000351, IRB00001138**

To: **Victoria Loerzel and Co-PI: Ryan A. Woodmansee**

Date: **October 01, 2016**

Dear Researcher:

On , the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination  
Project Title: Nurse Practitioner Student Knowledge and Attitudes towards  
Skin Cancer Assessments  
Investigator: Victoria Loerzel  
IRB Number: SBE-16-12604  
Funding Agency: UCF College of Nursing Intramural Grant(CON)  
Grant Title: Honors-In-The-Major (HIM) Research Grant.

Research ID: n/a

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the [Investigator Manual](#).

On behalf of Sophia Dziegielewska, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Patria Davis on 10/01/2016 03:22:16 PM EDT

IRB Coordinator

**APPENDIX B: PERMISSION TO RECRUIT**  
APPENDIX B  
PERMISSION TO RECRUIT

**From:** [Angela Ritten](#)  
**To:** [Victoria Loerzel](#)  
**Subject:** RE: Research in your course this semester  
**Date:** Wednesday, August 24, 2016 9:55:05 AM  
**Attachments:** [image001.png](#)

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yes OK by me.

Angela Ritten, DNP, ARNP, FNP-BC (UCF Alum '84, '96, & '13)  
Assistant Professor  
Program Coordinator: DNP Advanced Practice (post-BSN & post-MSN)  
[angela.ritten@ucf.edu](mailto:angela.ritten@ucf.edu)

UCF College of Nursing  
University Tower, 12201 Research Parkway, 32826 - Office 419

*Please note: Florida has a very broad open records law (F. S. 119). Emails may be subject to public disclosure.*

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**From:** Victoria Loerzel  
**Sent:** Wednesday, August 24, 2016 9:09 AM  
**To:** Angela Ritten  
**Subject:** Research in your course this semester

Hi there, just following up. My student still would like to use your class to recruit NP students for his research study on skin cancer knowledge. Just confirming that this is ok- we are going to be going through IRB in Septemeber with data collection in early November. Let me know if you need more info.

Vicki

**Vicki Loerzel, PhD, RN, OCN**  
**Associate Professor and**  
**Beat M. and Jill L. Kahli Endowed Professor in Oncology Nursing**  
**Coordinator- Nursing Honors in the Major Program**  
College of Nursing | University of Central Florida  
12201 Research Parkway, Ste. 300, Orlando, FL 32826  
p: 407.823.0762 | f: 407.823.5675  
[victoria.loerzel@ucf.edu](mailto:victoria.loerzel@ucf.edu) | [www.nursing.ucf.edu](http://www.nursing.ucf.edu)  
Main Nursing Office: 407.823.2744



*Please note: Florida has a very broad open records law (F. S. 119). Emails may be subject to public disclosure.*

**APPENDIX C: INFORMED CONSENT DOCUMENT**  
APPENDIX C  
INFORMED CONSENT DOCUMENT



Dear student, you are being invited to participate in the research study titled "Nurse Practitioner Student Knowledge and Attitudes towards Skin Cancer Assessments" being conducted by Ryan Woodmansee, a UCF CON undergraduate Honors in the Major student. Below is the Explanation of Research document. If you would like to participate in this study, please use the following link to access the survey.

[http://ucf.qualtrics.com/SE/?SID=SV\\_bBHO6hoe6xkZKRL](http://ucf.qualtrics.com/SE/?SID=SV_bBHO6hoe6xkZKRL)

Thank you,  
Dr. Vicki Loerzel



#### **EXPLANATION OF RESEARCH**

Title of Project: Nurse Practitioner Student Knowledge and Attitudes towards Skin Cancer Assessments

Principal Investigator:

Victoria Loerzel, PhD, RN, OCN\*  
Associate Professor, Coordinator: Honors in the Major Program,

Co-Investigator:

Ryan Woodmansee, Undergraduate Honors in the Major Nursing Student, UCF  
954-770-0193

Faculty Supervisor: Dr. Victoria Loerzel

You are being invited to take part in a research study. Whether you take part is up to you.

- The purpose of this research is to examine Nurse Practitioner (NP) students' knowledge, attitudes and confidence level towards performing skin cancer assessments. This information will inform educators where improvement in skin cancer education is needed.
- If you decide to participate, you will be asked to access a survey in Qualtrics. The link will be provided for you through an email within the Gerontology course. You may take this survey wherever you like. Participation is voluntary and not part of

1 of 2

IRB Protocol No.

Date:

the Gerontology course. Your participation will remain confidential and will not be shared with the instructor of the course. You will be asked to create a unique ID once you are finished with the survey. This will allow you to pick up a \$5.00 gift card from the College of Nursing front desk once the survey period is over.

- Your participation will last for the time it takes you to complete the survey, approximately 15 to 20 minutes.

**Study contact for questions about the study or to report a problem:** If you have questions, concerns, or complaints:

Ryan Woodmansee, at (954) 770-0193 or by email at [ryanwoodmansee@knights.ucf.edu](mailto:ryanwoodmansee@knights.ucf.edu). You may also feel free to reach Dr. Loerzel, Faculty Supervisor, College of Nursing at 407-823-0762 or by email at [Victoria.Loerzel@ucf.edu](mailto:Victoria.Loerzel@ucf.edu).

**IRB contact about your rights in the study or to report a complaint:** Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

**APPENDIX D: PERMISSION TO USE SURVEY**  
APPENDIX D  
PERMISSION TO USE SURVEY

**From:** [Debra Shelby](#)  
**To:** [Ryan Woodmansee](#)  
**Cc:** [Victoria Loerzel](#)  
**Subject:** Re: UCFStudent\_Research  
**Date:** Monday, June 13, 2016 12:27:02 PM

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Absolutely! I would be thrilled to see your work. Let me know if you need anything. Would you like for me to send it to you in a PDF?

Sent from my iPhone

On Jun 13, 2016, at 12:07 PM, Ryan Woodmansee <[ryanwoodmansee@Knights.ucf.edu](mailto:ryanwoodmansee@Knights.ucf.edu)> wrote:

Dear Dr. Debra Shelby:

My name is Ryan Woodmansee and I am a BSN nursing student at the University of Central Florida Honors College. I am working on my honors in the major research project. For my research I will be conducting an exploratory descriptive study using the Family Nurse Practitioner Students as my population at University of Central Florida. I will be assessing the knowledge and attitude of FNP students with diagnosing and recommending treatment for various types of skin cancer. I came across your study "Knowledge, Attitudes and Practice of Primary Care Nurse Practitioners Regarding Skin Cancer Assessments: Validity and Reliability of a New Instrument" and was interested in your assessment instrument.

I am emailing you today to ask for permission to use your KAP-SCA tool to evaluate the NP students at UCF and their knowledge of skin cancer. I am working with my committee consisting of Victoria Loerzel, PhD, RN, OCN, Dawn Turnage, DNP, ARNP, FNP-BC, and Dermatologist David Weinstein, M.D. I believe this tool would align perfectly with the research that I am conducting. I would sincerely appreciate it if you allow me to use your tool in my study. I look forward to hearing from you.

Thank you,

Ryan Woodmansee

**APPENDIX E: KAP-SCA INSTRUMENT**  
APPENDIX E  
KAP-SCA INSTRUMENT

**Multiple Choice Directions:** Review each item and choose the best answer. Please circle the appropriate letter and make sure that your answer is clearly marked.

Item 1: Which of the following is depicted in this picture?

Location: Scalp    Size: 1-2 mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 2: Which of the following is depicted in this picture?

Location: Forearm    Size: 5mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 3: Which of the following is depicted in this picture?

Location: Trunk Size: 4mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 4: Which of the following is depicted in this picture?



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 5: Which of the following is depicted in this picture?

Location: Trunk

Size: 5mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 6: Which of the following is depicted in this picture?

Location: Trunk

Size 4mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary



Item 7: Which of the following is depicted in this picture?

Location: Right ear Size: 1.1cm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 8: Which of the following is depicted in this picture?

Location: Dorsal hand Size: 8mm

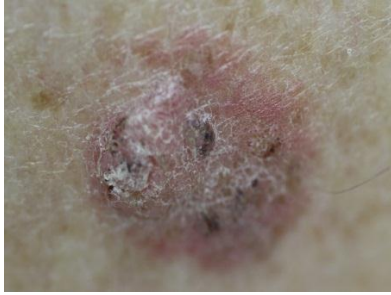


- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 9: Which of the following is depicted in this picture? Location: Right upper extremity Size: 7mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 10: Which of the following is depicted in this picture? Location: Dorsal hand Size 5mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 11: Which of the following is depicted in this picture? Location: Trunk Size: 2.7 cm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 12: Which of the following is depicted in this picture? Location: Lower extremity 6 mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 13: Which of the following is depicted in this picture?

Location: Upper extremity

9mm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 14: Which of the following is depicted in this picture?

Location: Trunk Size: 4mm



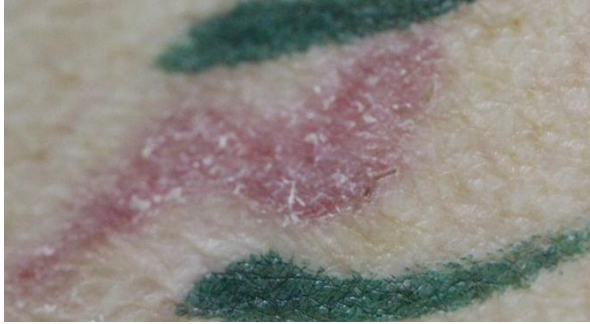
- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 15: Which of the following is depicted in this picture?

Location: upper extremity Size: 1.1 cm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 16: Which of the following is depicted in this picture?

Location: Trunk Size: 1.2 cm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 17: Which of the following is depicted in this picture?

Location: Trunk Size 1.3cm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 18: Which of the following is depicted in this picture?

Location: Lower extremity Size: 2.7 cm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 19: Which of the following is depicted in this picture?

Location: Scalp Size: .9 cm



- A. Non-melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

Item 20: Which of the following is depicted in this picture?

Location: Face Size: 7mm



- A. Non- melanoma skin cancer
- B. Non-cancerous lesion
- C. Melanoma
- D. Pre-cancerous lesion

Based on your answer, would you:

- A. Biopsy
- B. Cryo
- C. Refer to a specialist
- D. Benign lesion, no treatment necessary

**Directions:**

Please read the items and circle the best answer. Make sure all answers are clearly marked.

1. The dermatology training I received in my NP program prepared me for practice.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

2. I was educated on skin cancer exams in my clinical rotations or classes in my NP program.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

3. I was educated on skin biopsy techniques during my NP program.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

4. I was educated on cryo therapy during my NP Program.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_



5. I supplemented my dermatology education by attending a dermatology conference or workshop.

0	1	2	3	4
None	Strongly disagree	Disagree	Agree	Strongly agree

Comments: \_\_\_\_\_  
\_\_\_\_\_

6. I have received training on skin cancer exams or dermatology procedures from my supervising or collaborating physician.

0	1	2	3	4
None	Strongly disagree	Disagree	Agree	Strongly agree

Comments: \_\_\_\_\_  
\_\_\_\_\_

### **Knowledge on General Skin Cancer Facts**

Directions: Please circle the best answer. Make sure all answers are clearly marked.

7. The following skin lesions have the ability to metastasize except:

1. Squamous cell
2. Melanoma
3. Sarcoma
4. Dysplastic nevus

Comments: \_\_\_\_\_  
\_\_\_\_\_

8. The skin cancer with the highest rate of incidence reported in the US population is:

1. Basal Cell
2. Squamous Cell
3. Merkel Cell
4. Sarcoma

Comments: \_\_\_\_\_  
\_\_\_\_\_

9. Melanoma treatment is determined by all of the following except:

1. Type of melanoma
2. Breslow depth
3. Stage of melanoma
4. Age
5. Fitzpatrick skin type

Comments: \_\_\_\_\_  
\_\_\_\_\_

10. The proper biopsy technique(s) for a pigmented lesion include:

1. Excisional biopsy
2. Incisional biopsy
3. Saucerization (deep shave biopsy)
4. 1, 3

Comments: \_\_\_\_\_  
\_\_\_\_\_

11. Frequently used treatments for actinic keratoses can include all of the following except:

1. Cryo therapy
2. 5 FU
3. Photo dynamic therapy
4. Lactic acid

Comments: \_\_\_\_\_  
\_\_\_\_\_

12. Facts on Mohs micrographic surgery include all of the following except:

1. Is the preferred surgical treatment for recurrent skin cancers
2. Is a surgical procedure that spares the most amount of healthy tissue
3. Requires general anesthesia
4. Cure rates can be 98% or higher

Comments: \_\_\_\_\_  
\_\_\_\_\_

13. A sentinel lymph node biopsy is indicated for:

1. Melanoma with Breslow depth equal or greater than 1mm
2. Basal Cell Carcinoma
3. Dysplastic nevi
4. None of the above

Comments: \_\_\_\_\_  
\_\_\_\_\_

14. Risk factors for Squamous cell carcinoma include all of the following except:

1. HPV
2. Trauma
3. Sun exposure
4. Multiple Nevi

Comments: \_\_\_\_\_  
\_\_\_\_\_

15. Risk factors for melanoma include all of the following except:

1. Genetics
2. History of vitiligo
3. Sun exposure
4. Having many nevi

Comments: \_\_\_\_\_  
\_\_\_\_\_

16. The fastest growing incidence of skin cancer in children 15-29 yrs of age is:

1. Squamous cell
2. Basal Cell
3. Melanoma
4. None of the above

Comments: \_\_\_\_\_  
\_\_\_\_\_

17. Primary site(s) for melanoma include all of the following except:

1. Eye
2. Lung
3. Nails
4. Rectum

Comments: \_\_\_\_\_  
\_\_\_\_\_

18. Which of the following is not included in the types of melanoma?

1. Nodular
2. Lentigo maligna
3. Merkel
4. Desmoplastic

Comments: \_\_\_\_\_  
\_\_\_\_\_

19. Which is the most frequently occurring site for metastatic melanoma?

1. Ovaries
2. Liver
3. Eye
4. Kidney

Comments: \_\_\_\_\_  
\_\_\_\_\_

Directions: Please circle the best answer. Make sure all answers are clearly marked.

20. As a primary care provider, I feel it is my responsibility to know how to do a full body skin cancer exam.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
<b>disagree</b>			<b>agree</b>	

Comments: \_\_\_\_\_  
\_\_\_\_\_

21. I feel it is important to look for skin cancers when examining any patient.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

22. I find that one of the barriers to performing a full body skin cancer exam is a lack of time.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

23. I refer full body skin exams to a dermatology specialist.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

Directions: Please circle the best answer. Make sure answer is clearly marked.

24. I do not feel confident performing full body skin exams.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_

25. I am afraid to miss a skin cancer so I refer to a dermatology specialist.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_

Directions: Please circle the best answer. Make sure answers are clearly marked.

26. I confident that I accurately identify most non-melanoma skin cancers.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_

27. I find it difficult to identify abnormal moles during an exam.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_

28. I am confident that I can identify a melanoma during a skin exam.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
<b>disagree</b>			<b>agree</b>	

Comments: \_\_\_\_\_  
\_\_\_\_\_

29. I would perform biopsies if I had formal training.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

30. If I do not understand a pathology result, I feel comfortable discussing it with a dermatology specialist.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

31. I feel confident when discussing non-melanoma skin cancer diagnoses and treatment options with a patient.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

32. I am confident discussing melanoma diagnosis and treatment options with a patient.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

33. I feel confident performing full body skin cancer exams on adolescents or young adults who have many moles.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
<b>disagree</b>			<b>agree</b>	

Comments: \_\_\_\_\_  
\_\_\_\_\_

Directions: Please circle the best answer. Make sure all answers are clearly marked.

34. It is part of my role as a primary care provider to discuss with patients the importance of performing self-skin exams.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

35. It is my responsibility as a health care provider to educate patients on skin cancer prevention and encouraging annual skin cancer examinations.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_



Directions: Please circle the best answer. Make sure answers are clearly marked.

36. I attended educational programs to help me feel more confident performing skin cancer exams or dermatologic procedures after graduating from my NP program.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_

\_\_\_\_\_

37. I became confident performing skin cancer exams as I became more experienced in practice.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_

\_\_\_\_\_

38. Upon graduation, I felt confident practicing basic dermatology skin exams from education received during my NP program.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_

\_\_\_\_\_

39. I felt confident performing biopsies or cryo therapy from education received in NP program.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_

\_\_\_\_\_

Directions: Please circle the best answer. Make sure the answer is clearly marked.

40. I refer patients to a dermatology specialist for skin cancer examinations  
if, for whatever reason, I am unable to do it.

0	1	2	3	4
None	Strongly	Disagree	Agree	Strongly
	disagree			agree

Comments: \_\_\_\_\_  
\_\_\_\_\_

41. When I perform the full body skin exam, I talk to the patient about the findings of my exam.

0	1	2	3	4
None	Strongly	Disagree	Agree	Strongly
	disagree			agree

Comments: \_\_\_\_\_  
\_\_\_\_\_

42. I perform a full body skin cancer exam during my annual physicals.

0	1	2	3	4
None	Strongly	Disagree	Agree	Strongly
	disagree			agree

Comments: \_\_\_\_\_  
\_\_\_\_\_

43. I have my patients remove their clothing prior to performing a skin cancer examination.

0	1	2	3	4
None	Strongly	Disagree	Agree	Strongly
	disagree			agree

Comments: \_\_\_\_\_  
\_\_\_\_\_

44. When I do focused exams on any patient, I look for abnormal lesions.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

Directions: Please circle the best answer. Make sure the answer is clearly marked.

45. I discuss with my patient any biopsy results that come back as skin cancer.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

46. I have access to a dermatopathologist to evaluate my skin biopsies.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

47. I discuss treatment options for melanoma and non-melanoma skin cancers with my patient.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

48. I question pathology results that do not correlate with my clinical diagnosis.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
<b>disagree</b>			<b>agree</b>	

Comments: \_\_\_\_\_  
\_\_\_\_\_

Directions: Please circle the best answer. Make sure all answers are clearly marked.

49. I choose not to biopsy lesions located on the face, ears, nose, or scalp.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
<b>disagree</b>			<b>agree</b>	

Comments: \_\_\_\_\_  
\_\_\_\_\_

50. Sometimes I am uncertain about what the best biopsy technique may be for a suspicious lesion.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

51. I have used cryo therapy on pigmented lesions.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly</b>
	<b>disagree</b>			<b>agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

52. I have used cryo therapy on a lesion even though I was uncertain of the diagnosis of that lesion.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

53. I perform cryo therapy on pre-cancerous lesions (Actinic Keratoses).

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

54. I perform skin biopsies if indicated.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

Directions: Please mark the best answer. Make sure all answers are clearly marked.

55. I use topical medications like 5 FU, Fluorouracil, or Imiquimod to treat AKs, superficial SCC or BCC.

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>None</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly agree</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

56. I perform excisions, cryo therapy, or electrodesiccation/curettage to treat non-melanoma skin cancer.

0	1	2	3	4
None	Strongly disagree	Disagree	Agree	Strongly agree

Comments: \_\_\_\_\_

\_\_\_\_\_

57. I perform excisional biopsies for lesions suspicious for melanoma.

0	1	2	3	4
None	Strongly disagree	Disagree	Agree	Strongly agree

Comments: \_\_\_\_\_

\_\_\_\_\_

Directions: Please circle the best answer. Make sure all answers are clearly marked.

58. I talk to my patients about skin cancer risk factors.

0	1	2	3	4
None	Strongly disagree	Disagree	Agree	Strongly agree

Comments: \_\_\_\_\_

\_\_\_\_\_

59. I educate my patients on sun protection, including sunscreen and clothing protection.

0	1	2	3	4
None	Strongly disagree	Disagree	Agree	Strongly agree

Comments: \_\_\_\_\_

\_\_\_\_\_

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