INCREASING USE OF SKIN CANCER SCREENING TOOLS IN PRIMARY CARE

by

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GRADUATE COLLEGE

As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Stefany Cimino, titled Increasing Use of Skin Cancer Screening Tools in Primary Care and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

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DEDICATION

I would like to dedicate this project to my family and friends who have supported me throughout this journey. My Mother, Linda Cimino, has always inspired me, and she has always been my biggest supporter. I would like to thank the rest of my family and close friends who have always encouraged me. Without their support, I would have never succeeded in this program.

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ABSTRACT

Purpose: The purpose of this DNP quality improvement project was to increase primary care provider knowledge, increase the likelihood of skin cancer screening including the use of the Self-Assessment of Melanoma Risk Score (SAMScore) tool, and likelihood of earlier dermatology referral practices after their completion of a brief skin cancer screening education program.

Background: Skin cancer is the most common cause of cancer in the United States, with melanoma considered the deadliest form. Approximately 76,380 Americans will be newly diagnosed with melanoma annually, and 10,000 individuals will die from melanoma. Current clinical guidelines utilize the visual skin examination to assess skin lesions.

Methods: This project utilized a pre- and post-test design to evaluate whether an educational module was effective in increasing provider knowledge. Provider knowledge was assessed using knowledge-based multiple-choice questions. Current skin cancer screening practices and current dermatology referral practices of the participants was also assessed. Providers of interest include Physicians, Physician Assistants, and Nurse Practitioners working in a private primary care clinic. An email invited providers to participate in this DNP project.

Results: Data collection took place over a one-week period. All five providers participated in the educational intervention, and responded to both the pre- and post-test. After completion of the educational intervention, the five participants (N=5, 100%) answered all five multiple-choice knowledge-based questions correctly, demonstrating increased provider knowledge. Provider intent to refer patients to dermatology for consultation increased, as well as provider intent to assess patients' sun protection methods.

Conclusions: Findings suggest there were educational gaps in skin cancer screening knowledge in this setting. The 100% participation rate for this DNP quality improvement project at this clinical practice reflects all of the PCPs' willingness to increase their skin cancer and screening knowledge. Further, these results demonstrate their consideration of the positive impact of incorporating a patient self-assessment that may necessitate additional interventions into routine care. DNP quality improvement projects assist in the development of strategies to increase best practices. The implementation of education interventions for skin cancer screening may lead to improved patient outcomes.

INTRODUCTION

According to the Centers for Disease Control and Prevention (CDC, 2017b), skin cancer is the most common cause of cancer in the United States, with melanoma considered the deadliest form. According to the American Cancer Society (2018), approximately 76,380 Americans will be newly diagnosed with melanoma annually, and 10,000 individuals will die from melanoma.

Current clinical guidelines advise providers to utilize the visual skin examination to assess skin lesions (United States Preventive Services Task Force [USPSTF], 2016). The "ABCDE rule" examines the following characteristics when assessing a skin lesion: presence of asymmetry, border irregularity, color that is non-uniform, diameter of lesion greater than six millimeters, and evolving over time (USPSTF, 2016).

Despite the utilization of visual skin examinations to assess skin lesions, the number of skin cancer and melanoma rates in the United States is expected to increase. A possible method for improving skin cancer screening rates, specifically melanoma, is proposed. Increasing PCP knowledge of skin cancer and skin cancer screening tools is examined in this DNP project. This project may determine whether a patient self-screening tool will increase the number of provider screenings and/or specialty referrals, such as dermatology.

Background Knowledge

According to the American Academy of Dermatology (AAD) (2018), skin cancer is classified as an abnormal growth of skin cells, typically developing on areas of the skin exposed to harmful ultraviolet rays of the sun or indoor tanning beds. The effects of skin cancer are far-

reaching, with diagnoses spanning all ages, races, ethnic groups, and geographical locations, although lighter skinned individuals prone to sunburn have a higher general risk (AAD, 2018).

The most common types of skin cancer include basal cell carcinoma (BCC), squamous cell carcinoma (SCC), and melanoma. BCC is considered the most common form of skin cancer, frequently developing in fair-skinned individuals, although they still occur in all races (AAD, 2018). Developing after long term exposure to the sun or indoor tanning beds, BCC may occur anywhere on the body, but most frequently on the head, neck, and arms (AAD, 2018). BCCs often appear as a small bump that is flesh-colored (AAD, 2018). Risks for invasion of surrounding tissue or growth of BCC into nerves and bones exist, therefore early diagnosis and treatment is important (AAD, 2018).

SCC is the second most common type of skin cancer, appearing as a firm red bump, scaly patch, or a sore that re-opens after it heals (AAD, 2018). SCC has a tendency to form on sun-exposed skin. Similar to BCC, SCC typically develops in lighter skinned individuals, although darker skinned individuals are still at risk. There is a risk of disfigurement and damage, but early diagnosis and treatment may prevent the spread of SCC to other areas of the body (AAD, 2018).

According to the AAD (2018), the deadliest form of skin cancer is melanoma. Melanoma typically develops in a mole or from a new patch on the skin, and may quickly spread to other areas of the body (AAD, 2018). The majority of melanoma skin cancers originate from ultraviolet (UV) damaged skin cells (CDC, 2017b). All race and ethnicities are at risk for developing melanoma, however, an increased risk exists for individuals with greater exposure to UV light. Tanning bed use for individuals prior to 35 years of age increases melanoma risk by 59%, with the risk increasing with each tanning bed use. An 80% increase in melanoma risk is

reported amongst individuals who have had five or more blistering sunburns before the age of 20 (AAD, 2018). Populations living in sunny areas or close to the equator are at an increased risk, as well as individuals who have failed to protect their skin from UV exposure (AAD, 2018). Individuals who have one or more of the following are at an increased risk for developing melanoma: fair skin tones, hair that is red or blond in color, eyes that are blue or green, skin that is sensitive to the sun, moles that are large or a quantity of 50 or more, and any mole that is atypical (AAD, 2018). Having been diagnosed with any type of skin cancer, any other type of cancer, or being immunocompromised also increases the risk for developing melanoma (AAD, 2018).

The incidence rate for developing melanomas of the skin in the United States was reported to be 22.1 out of 100,000 individuals (CDC, n.d.). Cases of melanoma reporting to cancer registries are more commonly delayed due to diagnosis and treatment occurring in the outpatient setting, such as a family practice or dermatology office (CDC, 2017a). Consequently, the incidence rate for developing melanomas of the skin may be higher than reported. With the absence of implementing community interventions, melanoma rates are expected to increase over the next 15 years, with projected costs for treatment of approximately $1.6 billion (CDC, 2015a).

In order to diagnose melanoma, a clinician will examine the patient's skin, carefully looking at moles or any suspicious spots (AAD, 2018). A derma scope is used to magnify and shine light on the skin, allowing the clinician to observe the skin pigmentation and structures (AAD, 2018). When moles or spots on the skin are suspicious, a biopsy will be sent for evaluation (AAD, 2018). When a biopsy reports a diagnosis of melanoma, the stage of the disease will be given to determine how deeply the cancer has grown into the skin (AAD, 2018).

According to the National Cancer Institute (NCI) (2018b), melanoma may be treated using the five types of standard treatment including surgery, chemotherapy, radiation therapy, immunotherapy, and targeted therapy. The primary treatment for all stages of melanoma is surgical excision (NCI, 2018b). This surgery involves a wide local incision removing the melanoma as well as some of the normal tissue surrounding the area (NCI, 2018b). During surgery, lymph node mapping and sentinel lymph node biopsy may be performed to assess for the presence of metastasis in the sentinel lymph node. The sentinel or first lymph node has the highest risk of cancer cell infiltration from the tumor because of its location (NCI, 2018b). Some patients may require chemotherapy after surgery in order to kill any remaining cancer cells (NCI, 2018b).

Prevention of skin cancer involves the practice of reducing exposure to UV radiation all year round. Sun-protective behaviors include the use of a broad-spectrum sunscreen with an SPF of 15 or higher, sun protective clothing such as a hat, or limiting time outside in direct sunlight during peak UV exposure times (CDC, 2015b). The American Cancer Society (ACS) (2015) recommends that patients be aware of their normal skin patterns as an important step to early skin cancer detection. A monthly skin self-exam may be done in order to identify any changes in skin patterns (ACS, 2015). Clinicians may also provide total body skin examinations as part of routine physical examinations (ACS, 2015).

According to the NCI (2018a), visual examination of the skin is considered the only widely recommended screening procedure for skin cancer. This includes both visual examination of the skin by a clinician and patient self-examination of the skin (NCI, 2018a). NCI (2018a) reports that although there is a lack of evidence showing the reduction of melanoma mortality

rates based on skin cancer screening, over 90% of melanomas of the skin can be identified by visual examination with the naked eye.

The Self-Assessment of Melanoma Risk Score (SAMScore) is a validated screening tool created in France by the West Melanoma Network, which is comprised of dermatologists, general practitioners, and nurses involved in skin cancer prevention and treatment (Quereux et al., 2010). The questionnaire contains seven questions using established risk factors for melanoma found in literature, including the following: the skin photo type, number of melanocytic naevi, tendency to develop freckling of the skin, sunburn during infancy, residing in a country at a low altitude, personal history of previous melanoma of the skin, and a history of melanoma of the skin in a first-degree relative (Quereux et al., 2012). The design of the questions is meant to be for individuals without any medical knowledge (Quereux et al., 2012). Patients are considered high risk if at least one of the following risk factors are present: a patient under the age of 60 presents with over 20 melanocytic nevi on both arms; and, a patient older than the age of 60 with a tendency to have freckling of the skin (Quereux et al., 2012). Melanoma is considered a worldwide public health issue due to the continued increase in incidence, with an estimated 197,000 new cases of melanoma of the skin diagnosed annually throughout the world (Quereux et al., 2012).

The SAMScore has been selected for use in this DNP project, as it is a patient-centered approach to screening individuals for melanoma of the skin. Clinicians hold an important opportunity to detect skin cancer early, although one of the main obstacles for melanoma screening in primary care is lack of time (Geller et al., 2004). Involving the patients to self-assess their melanoma risk factors can reduce time in the screening process (Quereux et al., 2012).

In 2010, only 60% of young adults aged 18 to 24 reported utilizing one or more methods of sun protection, while 72% of individuals 25 years of age and older reported using at least one sun protection method (CDC, 2015b). For high school students, only 13% of females and 7% of males reported routinely applying the recommended sunscreen when outside (CDC, 2015b). These alarming statistics support the need for improving education and screening of skin cancer and sun safety behaviors in the primary care setting.

The United States Preventive Services Task Force (USPSTF) (2016) found current evidence to be insufficient to support total body skin examinations (TBSEs) as a skin cancer screening method for the general population. In a study by Oliveria et al (2011), only 59.6% of family practitioners reported performing TBSEs, compared to 81.3% of dermatologists. Reported barriers to performing TBSEs include time constraints, competing comorbidities, and patient embarrassment for the examination (Oliveria et al, 2011).

Evidence suggests that while education and preventative measures for sun safety may decrease the risk of developing skin cancer, skin cancer and melanoma rates continue to rise (CDC, 2015a). A critical challenge for skin cancer screening programs is identifying individuals who are at a high-risk. The SAMScore is a self-administered questionnaire that allows individuals to assess melanoma risk factors by themselves (Quereux et al., 2012). The SAMScore tool identifies patients at a higher risk, allowing primary care providers to examine these patients or refer to a dermatologist (Quereux et al, 2012). Utilizing the SAMScore to detect a new case of melanoma was found to necessitate screening 11.54 times fewer patients than with the non-targeted screening (Quereux et al, 2012). This tool may assist in identifying the need for

and decreasing barriers to performing total body skin examinations (TBSEs) while increasing patient education for skin cancer prevention in the primary care setting.

Local Problem

In 2015, the incidence rate for developing melanoma of the skin in New York was reported to be 17.7 out of 100,000 individuals, with a range of 17.1 to 18.3 (CDC, 2017a). From 2011 to 2015, the incidence rate for developing melanoma of the skin in Suffolk County was reported to be 26.5 out of 100,000 individuals (New York State Department of Health [NYSDH], 2018). In the same time period, the reported rate of mortality of melanoma of the skin in Suffolk County is 2.7 out of 100,000 individuals, with a range of 2.4 to 3.1 (NYSDH, 2018).

Purpose

The purpose of this project was to increase primary care provider (PCP) knowledge, increase the likelihood of skin cancer screening including the use of the SAMScore tool, and likelihood of earlier dermatology referral practices after their completion of a brief skin cancer screening education program. Identifying knowledge gaps in the necessity for skin cancer screening and the use of the SAMScore tool, barriers to incorporating skin cancer screening into a primary care visit, and solutions to including this much needed primary care exam addition can be achieved through a skin cancer screening education program for the clinical staff. A timely, patient centered initiative during a primary care visit includes identification of patients at high-risk for developing skin cancer and perform TBSEs. Utilizing a specific tool for skin cancer screening in the primary care setting like the SAMScore, a validated patient-completed questionnaire, helps identify individuals who are at high-risk for developing skin cancer. Only patients with high SAMScores would be advised to consent to a TBSE during the primary care

visit. Stakeholders include physicians (MDs) and advance practice registered nurses (APRNs) working in the primary care practice setting, as well as the individuals who are patients at the practice.

Study Question

In a primary care practice in Suffolk County, NY, does a skin cancer screening education program focusing on skin cancer and prevention measures, including the use of the SAMScore tool, result in increased PCP knowledge, increase the likelihood of skin cancer screening, and likelihood of earlier dermatology referral practices?

Theoretical Framework

When utilized systematically, theories may help explain whether the possibility of a change exists (Grol, Bosch, Hulscher, Eccles, & Wensing, 2007). Lewin's Change Theory will further examine how to increase the PCPs likelihood of utilizing the proposed change.

Kurt Lewin, a social psychologist from the earlier 20th century, focused studies on dynamics within groups and organizations (Shirey, 2013). Lewin's theory is a three-phase model utilizing the following stages: unfreezing, transitioning, and refreezing. The first stage, the unfreezing stage, involves preparing for the change (Shirey, 2013). This entails a change agent, such as a nurse practitioner (NP) at the primary care clinic, who identifies a problem and the need for change while organizing other employees within the clinic to realize the need for change (Shirey, 2013). For the purpose of this project, the need is to increase skin cancer screening education in the primary care setting.

The second stage of Lewin's theory, the moving stage, requires viewing the change as a process (Shirey, 2013). This stage entails engaging PCPs on the importance of deepening their

knowledge of skin cancer screening methods. Many PCPs may find this stage difficult, as it involves utilizing a new way to screen patients. The change agent holds a crucial role in keeping open communication with the PCP and staff on the proposed change, as this will help alleviate fears associated with the implementation of skin cancer screening methods. Implementing and monitoring this stage is beyond the scope of this DNP project.

The third stage of the change theory, refreezing, involves stabilizing the change in order to embed implementation into existing practice (Shirey, 2013). The refreezing stage is imperative for maintaining the implemented change in the future. The change agent may recognize ways to counteract resistance for the newly implemented screening tool and facilitate different methods to sustain the change (Shirey 2013). In order for PCPs to accept the SAMScore as a newly implemented tool, education should be provided on the benefits of earlier identification of high-risk melanoma patients who require TBSEs or dermatology referrals. Increased patient safety and outcomes should be emphasized as the overall goal of implementing the skin cancer-screening tool. Implementing and monitoring this stage is beyond the scope of this DNP project.

Synthesis of Evidence

In order to determine current recommendations and barriers for skin cancer screening, as well as gaps in literature, a scholarly search was conducted in PubMed, Medline, and Google Scholar, and CINAHL. The primary search term was skin cancer screening, with secondary terms including barriers, and primary care. The inclusion criteria for articles were those published within 10 years, English language, and human subjects. The search included systematic reviews, meta-analysis, and randomized controlled trials. This search yielded over 100 articles, but this was narrowed down based on the relevance to this DNP project. When

adding the search term SAMScore, only three articles yielded in CINAHL, and all are relevant to this DNP project.

Henrikson et al. (2018) performed a systematic review of 21 trials and 27 publications regarding the benefits and harms of behavioral counseling for skin cancer prevention. Harms were only reported in one trial of skin self-examination. According to the authors, an increase in skin cancer procedures was reported in the intervention group (8.0%) compared to the control group (3.6%) at six months (P< .001), but not from the time period of six to 12 months (3.9% vs. 3.3%, P= .50). The review concluded that interventions may increase skin self-examination in adult patients, but may lead to an increase in unnecessary skin procedures in the absence of skin cancer detection (Henrikson et al., 2018).

A systematic review by Lakhani et al. (2014) determined the prevalence of individuals having at least one TBSE increased from 14.5 in 2000 to 16.5 in 2005, and 19.8 in 2010 in the United States. The study reported higher screening rates among the elderly, fair-skinned population, as well as individuals who reported sunburn(s), or a family history of skin cancer. An estimated 51.1% of adults in the U.S. are at high-risk for developing melanoma, but only 24% have had at least one TBSE, despite evidence of increased screening since 2000 (Lakhani et al., 2014). A study by Oliveria et al. (2011), determined only 59.6% of family practitioners reported performing TBSEs, compared to 81.3% of dermatologists. Reported barriers to performing TBSEs include time constraints, competing comorbidities, and patient embarrassment for the examination (Oliveria et al., 2011). Increasing knowledge regarding barriers PCPs have to skin cancer screening can help improve practices in both primary care and dermatology settings (Oliveria et al., 2011).

In a study by Bradley (2012), a pretest, educational intervention, posttest, and program evaluation were analyzed to determine whether the use of a proposed skin cancer screening tool improved documentation by NPs at a college health center. The proposed screening tool in this study is a documentation device for providers to utilize during patient examinations. The study revealed a 223.4% increase in proper documentation of skin cancer screening and patient education (Bradley, 2012). An effective way to improve quality of services to patients and quality of NP documentation involves increasing education to NPs on skin cancer identification, screening and utilization of skin cancer screening tools (Bradley, 2012).

Strengths of the literature showed utilizing the SAMScore to detect a new case of melanoma necessitated screening 11.54 times fewer patients than with the non-targeted screening, thus saving time for the PCP to focus screening on the high risk patients (Querex et al., 2012). In a one-year follow-up cohort study that utilized the SAMScore, 57.9% of patients who were referred to a dermatologist attended the dermatologist consultation, while patient attendance with the dermatologist referral screening increased when the PCP named a specific dermatologist (Rat et al., 2011). Rat et al. (2015) performed a cohort study to evaluate the efficacy of the SAMScore and whether the identified high-risk patients consulted with their general practitioner for an annual skin examination. The study reported 61% of participants underwent skin examinations. In a randomized control study, patients who were identified as high-risk by the SAMScore also practiced more preventive behaviors, and were more likely to perform skin self-examinations when compared to the control group (Rat et al., 2014).

Limitations of the literature included small sample size, poor response rates, and reluctance to change current practice in several of the studies. A weakness of many of the studies

regarding the use of the SAMScore was the limited geographic area of the sample, which diminishes the generalizability of the results. Usher-Smith et al. (2011) identified that the USPSTF does not currently recommend mass screening of skin cancer, whereas in other countries such screenings are recommended.

Although the systematic review by Wu et al. (2016) revealed a 60% improvement in the targeted uptake of total body skin examinations, a gap was found for preventive measures for the pediatric population identified as high-risk for developing melanoma. Other identified gaps in literature included the lack of research utilizing the SAMScore in the primary care setting.

METHODS

This project implemented an educational intervention with the intention to increase provider knowledge of skin cancer screening. The provider's knowledge was assessed prior to the educational intervention and also after the intervention to evaluate the intervention's efficacy. For the purpose of this project, the Model for Improvement was utilized, incorporating the Plan-Do-Study-Act (PDSA) cycle to test the change.

Developed by Langley et al (2009), the Model for Improvement is a simple tool containing two main parts that have potential for accelerating improvement. The first part is comprised of the following three elements: selecting the change that can result in an improvement, establishing measures to know that the change is an improvement, and setting aims to establish the goal (Institute for Healthcare Improvement [IHI], 2018).

The second part of the model is the PDSA cycle, which guides the test of a change in order to determine if the change is an improvement (IHI, 2018). The PDSA cycle tests the change within the work setting by planning the change, trying the change, observing the results

of the change, and acting on what is learned (IHI, 2018). Once the change has been tested on a small scale, and modifications have taken place over several PDSA cycles, implementation of the change on a broader scale may then occur (IHI, 2018).

Utilizing the Model for Improvement with the PDSA cycle helped guide this project. Prior to completing a skin cancer screening focused education program, the PCPs' baseline skin cancer knowledge, current skin cancer screening methods, and dermatology referral practices were assessed. Immediately following the completion of the education program, the PCPs were assessed for increase in skin cancer knowledge, increase in likelihood to perform TBSEs, and increase in likelihood of making earlier dermatology referrals.

The Model for Improvement provided guidance during all phases of this project's proposed change. The change selected is an increase in the PCP's skin cancer screening knowledge with subsequent increases in the PCP's performing skin cancer screenings and likelihood of earlier dermatology referral after completion of a skin cancer screening focused education program. When establishing changes, quantitative measures were used in order to determine if the education program leads to increased knowledge, skin cancer screenings and likelihood of earlier referrals. A time-specific, measurable aim should be selected. An aim for this project is: within one week, all PCPs in the study setting will complete the baseline skin cancer knowledge, current skin cancer screening methods and current dermatology referral practices pre-test. Utilizing the PDSA cycle, the skin cancer screening education program can be initiated first on a small scale, such as for one week with all PCPs participating from one clinic. Immediately after completing the education program, the PCPs will complete posttest assessing changes in knowledge, likelihood of skin cancer screenings, and likelihood of earlier

dermatology referral. Learning from these initial PCPs completion of the entire process of pretest, education program, and posttest may require modifications in how to best implement this change, which is beyond the scope of this DNP project. Through several PDSA cycles, refinements can then be made (IHI, 2018). The change can then be implemented on a broader scale, such as for the entire primary care clinic. After the skin cancer screening specific education program has been completed by all PCPs at this primary care clinic, the next step would be to measure prospectively over the next six to 12 months the incidence of screening practices compared to the prior educational program, which is beyond the scope of this DNP project.

Project Design

The goal of a quality improvement (QI) project is to improve practices and processes within a specific patient group or setting (Polit & Beck, 2017). This QI project utilized a quantitative pretest/posttest design for evaluation. The pretest/posttest design allows baseline data to be obtained prior to the intervention, which allows the investigator to reassess data after the intervention in order to determine its efficacy (Polit & Beck, 2017).

Setting

This QI project was conducted at a stand-alone primary care clinic in Center Moriches, Suffolk County, NY. The identified clinic manages patients of a wide age range, including pediatric, adult, and geriatric patients. Site authorization has been obtained prior to implementation of this project (Appendix B).

Participants

Invited participants of this project are the five healthcare providers working in this primary care clinic. Healthcare providers included one medical doctor (MD), three nurse practitioners (NPs), and one physician assistant (PA), who voluntarily responded to a survey emailed by the practice manager. The email contained a disclosure form (Appendix C), which explains the project and their role. The potential participants were not obligated to complete the pre- and post-test surveys and educational training.

Data Collection

Participants completed a pre- and post-test survey, which is an appropriate method of quantitative data collection in a DNP project (Zaccagnini & White, 2017). Quantitative data collected in a DNP project is not meant to go through rigorous statistical tests for significance, but instead the data serves to demonstrate the efficacy of the project (Zaccagnini & White, 2017). The email contained links to the pretest, education PowerPoint, and posttest. Open-ended questions on the posttest were included in order to provide feedback on the usefulness of the educational PowerPoint. This DNP student created the pre- and post-test questions. The Family Nurse Practitioner (FNP) Specialty Coordinator and project committee from the College of Nursing at the University of Arizona provided guidance in the development of a meaningful and relevant survey for this DNP project.

The pretest included questions regarding provider demographics information regarding the type of provider, length of years in practice, and experience with skin cancer screening (Appendix D). Obtaining demographic information and describing the sample will lead to an increased understanding of the population being studied (Polit & Beck, 2017). The project used a

test containing questions regarding what the PCPs' current practice for melanoma of the skin screening is, their awareness of the SAMScore, whether or not they utilize this skin cancer screening tool, and their willingness to trial SAMScore.

Initial provider knowledge was assessed utilizing a pretest regarding skin cancer screening. Once baseline knowledge was obtained, participants viewed an educational PowerPoint presentation created by the student with voiceover on skin cancer screening (Appendix E). The educational PowerPoint was created with consideration of the various learning styles and time constraints of the participants. The learning objectives included enabling participants' ability to differentiate between three skin cancer types, identify two risk factors for skin cancer, name one melanoma fact, and how to utilize the SAMScore screening tool. Following the educational presentation, participants completed the after-intervention posttest (Appendix F). Data from the pre- and post-education intervention tests was analyzed.

Data Analysis

Pretest results were compared to posttest results to evaluate if the brief educational intervention lead to an increase in provider knowledge on skin cancer screening. Advantages of self-administered questionnaires include sustaining participant anonymity, avoidance of interviewer bias, and low cost to distribute (Polit & Beck, 2017). The tests were in Qualtrics (2019), software available through the University of Arizona. Excel software was utilized to analyze these findings with descriptive statistics. Descriptive statistics combine data while organizing and describing information. Descriptive statistical analysis is the traditional method for bringing meaning to data by describing the population in which data was collected from, as well as observations made in the population (Zaccagnini & White, 2017).

The demographic questions on the pretest are considered a nominal measurement, where numbers are assigned to classify characteristics into different categories (Polit & Beck, 2017). The pre- and post-tests also contain Likert scale questions, which are ordinal. Ordinal measurement involves sorting variables based on the meaningful order to them (Polit & Beck, 2017). For these nominal and ordinal measurements questions, based on the small sample size of this DNP project, percentages would be appropriate (Polit & Beck, 2017). The demographics distribution was displayed using a table. Bar graphs displayed the data found for all other pre- and post-test questions, as well as comparing findings between the pre- and post-test knowledge based questions.

Ethical Considerations

When including human participants in research, respect for persons, beneficence, and justice must be upheld. Prior to this DNP project commencing, a Determination for Human Research application was submitted. The University of Arizona Institutional Review Board (IRB) reviews proposed studies in order to maintain human participants are treated ethically (Polit & Beck, 2017). Prior to implementation, the IRB reviewed and determined that the project did not requires IRB approval (Appendix G).

Respect for Persons

According to the U.S. Department of Health and Human Services (USDHHS, 1979), two main principles encompass respect for persons and include the following: all individuals are treated with autonomy, and protection of those individuals with diminished autonomy. This DNP project focused on stakeholders who included NPs, PCPs, and PAs in the primary care setting. Participation was voluntary and privacy was upheld. The pre- and post-tests were found in

Qualtrics. Qualtrics does not show the names of the participants, and no data was shared between participants in Qualtrics.

Beneficence

Beneficence requires treating individuals in an ethical manner, while doing no harm and maximizing benefits (USDHHS, 1979). This project provided PCPs with increased knowledge of skin cancer screening, as well as use of the SAMScore. This is expected to ultimately lead to better outcomes for patients. Data collection was obtained anonymously in order to protect participants, and any identifying and demographic data was used only to gain an understanding of the population being studied. Any information gained was not intended to cause harm, nor was not used against participants. The data was electronic and kept in a network protected file at the college.

Justice

Justice ensures the right for all participants to be treated fairly and equally, as well as upholding participants' privacy throughout the study (Polit & Beck, 2017). Participants in this project included eligible providers in order to fulfill the project requirements. Identifying information will remain confidential, and limited to only what is required for the project.

RESULTS

A pre- and post-test, as well as an educational PowerPoint were emailed by the office manager to the five providers at Southbay Medical Care to assess provider knowledge of skin cancer and skin cancer screening. The timeframe of the pre- and post-test with the educational PowerPoint intervention took place over one week. The pretest consisted of three parts including demographics, five multiple-choice knowledge based questions, and four questions based on

current skin cancer screening practices. The posttest consisted of the same five multiple-choice knowledge-based questions, and three questions based on skin cancer screening practices. The posttest also included two Likert scale questions, one regarding intent to utilize the SAMScore to screen patients, the other regarding ease of understanding the PowerPoint educational material. The final question in the posttest allowed participants to write any changes they would recommend to improve the PowerPoint educational material.

Demographics

Out of five providers invited to participate in this DNP project, all five completed the pretest (Appendix D) and posttest (Appendix F), accounting for a 100% participation rate. In order to depict the characteristics of the participants who completed the pre- and post-test, a table was created (Table 1). One participant was between the ages of 20 to 35 (N=1, 20%), two participants were between the ages of 36 to 50 (N=2, 40%), one participant was over the age of 51 (N=1, 20%), and one participant did not report their age (N=1, 20%). One participant was a physician's assistant (PA) (N=1, 20%), one participant was a medical doctor (MD) (N=1, 20%), while the remaining three participants were advanced practice registered nurses (APRNs) (N=3, 60%). Participants reported diverse specialties, including adult gerontology (N=1, 20%), family (N=1, 20%), primary care (N=1, 20%), emergency medicine (N=1, 20%), and adult geriatric-emergency medicine (N=1, 20%). Experience of the providers ranged from less than two years to 34 years in practice.

TABLE 1. *Participant demographics.*

Age	*20-35*	*36-50*		*>51*
	20% (N=1)	40% (N=2)		20% (N=1)
Type of Provider	*Physician Assistant*	*Advanced Practice Registered Nurse*		*Physician*
	20% (N=1)	60% (N=3)		20% (N=1)
Specialty	*Adult Gerontology*	*Primary Care*	*Family*	*Adult Geriatric/Emergency Medicine*
	20% (N=1)	20% (N=1)	20% (N=1)	20% (N=1)

Knowledge Based Questions

After entering demographic information, participants were asked five knowledge-based multiple-choice questions that covered material reviewed in the educational PowerPoint presentation. Question number one focused on the incidence rate of melanoma in the United States, which three (N=3, 60%) out of five participants answered correctly. The second question focused on the incidence rate of melanoma in Suffolk County, NY, which two (N=2, 40%) of the five participants answered correctly. Questions three, four, and five asked the participants to identify different skin lesions based on a description. For the third question, four (N=4, 80%) of the providers answered correctly. Two participants (N=2, 40%) answered the fourth question correctly. Four participants (N=4, 80%) answered the fifth question correctly. The next two questions asked participants to rate how often they ask patients about skin changes and sun protection methods: either at every visit, once a year, or never. Four participants (N=4, 80%) reported asking patients once a year about skin changes, while one participant (N=1, 20%) reported asking at every visit. Three participants (N=3, 60%) reported asking patients about sun protection methods at every visit, while two participants (N=2, 40%) reported asking once a

year. When asked the percentage of patients the participant refers to dermatology on a yearly basis for consultation on suspicious skin lesions, four (N=4, 80%) participants reported referring 25% of patients to dermatology for consultation, while one participant (N=1, 20%) reported referring 50% of patients to dermatology for consultation on suspicious lesions. When asked if participants routinely asked patients to complete self-assessment skin questionnaires, all five (N=5, 100%) participants reported no.

For the posttest, all five participants (N=5, 100%) answered the knowledge-based questions, questions one through five, correctly. A bar graph (Figure 1) depicts the percentage of participants who answered each knowledge-based question correctly for both the pre- and post-test. For the sixth question (Table 2), three participants (N=3, 60%) intend to routinely ask patients about skin changes at every visit, while two participants (N=2, 40%) intend to ask once a year. For the seventh question (Table 2), three participants (N=3, 60%) intend to ask patients about sun protection methods at every visit, while two participants (N=2, 40%) intend to ask once a year. For the eighth question (Table 3), two participants (N=2, 40%) reported they intend to refer patients to dermatology on a yearly basis for consultation of suspicious skin lesions 100% of the time, while three participants (N=3, 60%) reported 25% of the time. Four participants (N=4, 80%) reported they were highly likely to have every patient complete the SAMScore following the completion of the PowerPoint education intervention, while one (N=1, 20%) provider reported they were somewhat likely to utilize the SAMScore. When asked if the PowerPoint educational material was easy to understand, four (N=4, 80%) of the participants reported they strongly agreed, while one provider (N=1, 20%) reported they somewhat agreed.

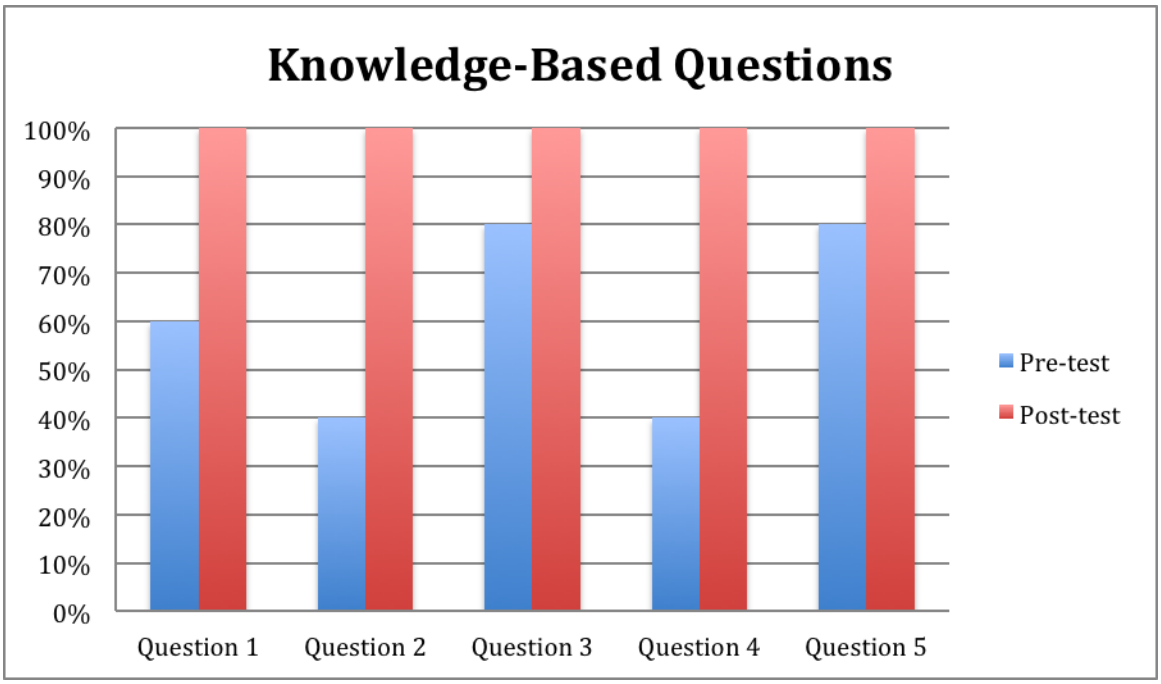

FIGURE 1. Knowledge-based questions.

TABLE 2. *Questions 6 and 7*.

	Every Visit	Once a Year
Question 6. Skin change		
Pre-test	N=1 20%	N=4 80%
Post-test	N=3 60%	N=2 40%
Question 7. Sun protection		
Pre-test	N=3 60%	N=2 40%
Post-test	N=3 60%	N=2 40%

TABLE 3. *Question 8.*

Percentage of Patients Referred to Dermatology on a Yearly Basis	Pretest	Posttest
25%	N=4 (80%)	N=3 (60%)
50%	N=1 (20%)	
100%		N=2 (40%)

DISCUSSION

Summary

The purpose of this DNP quality improvement project was to increase primary care provider knowledge and use of skin cancer screening and skin cancer screening tools. The overall findings show a general increase in provider knowledge of skin cancer and skin cancer screening, as evidenced by the improvement of scores in the knowledge-based questions on the pre- and post-test. Participants reported increased likelihood of asking patients their sun protection methods and if they have any suspicious skin lesions. Participants also reported an increased likelihood of referring patients to dermatology for consultation of suspicious skin lesions.

The unfreezing stage of Lewin's Change Theory guided the educational intervention by increasing skin cancer screening education within the DNP project site. After the completion of the PowerPoint educational module, the participants' scores of the five multiple-choice knowledge based questions all improved, which was one of the aims of this project. The Model for Improvement provided guidance during all phases of this project's proposed change. The change selected was an increase in the PCP's skin cancer screening knowledge, which was shown in the posttest with the improved scores of the knowledge-based questions. The time-

specific, measurable aim that was completed in this project was that all PCPs at project site completed the pretest, educational module, and posttest within a one-week time period. Although the posttest scores improved for each participant, the use of the SAMScore tool was not yet implemented into the project site. The student recommends that the PDSA cycle be applied to test the change of utilizing the SAMScore at this practice, examining whether patients found to be high risk for melanoma were given TBSEs and/or referred to dermatology for consultation of suspicious skin lesions. The change would be evaluated for any improvements needed, and any barriers to the change of utilizing the SAMScore would be identified.

Limitations

A limitation of this DNP project is the simultaneous accessibility of the educational PowerPoint and posttest. The PowerPoint educational intervention was emailed to participants with the assumption that the learning module would be completed prior to taking the posttest. However, there is no mechanism to guarantee that this sequence was followed. Hypothetically, the participant could have answered the posttest questions while viewing the educational PowerPoint. If so, the posttest knowledge data may have been different if participants were only able to access after completing the educational PowerPoint.

Another limitation is that the pre- and post-tests did not take into account participants' prior experience with diagnosing skin cancer, skin cancer screening, or provider preference for skin cancer screening tools.

Future Implications

To more fully achieve the positive impact of this QI initiative, the project site may consider implementing these suggested next steps. The first step would assess the PCPs'

previous experience with diagnosing skin cancer and provider preferences for skin cancer screening tools; the next step would be to perform a retrospective chart review to determine if any and how many skin cancer screenings and dermatology referrals were documented for the one-year period prior to this DNP project's educational intervention; the third step would be to include this educational module and skin cancer screening/dermatology referral as standards of care for the PCPs at this site; the fourth step would include the education module and skin cancer screening/dermatology referral with new hire PCP on-boarding materials; the fifth step would include the addition of the SAMScore tool to the patient-completed paperwork; and finally the sixth step would track the number of positive skin cancer screenings and dermatology referrals for one-year after implementation. The project site may include other steps based on their specific needs and patient population.

Potential opportunities to disseminate the findings of this project may include forums such as presenting at a primary care conference and submitting to a DNP student journal. A personal communication from a staff member at the project site informed this DNP student that the practice is interested in utilizing the SAMScore, and they have printed out the educational PowerPoint module for staff use.

Conclusion

The 100% participation rate for this DNP QI project at this clinical practice reflects all of the PCPs' willingness to increase their skin cancer and screening knowledge. Further, these results demonstrate their consideration of the positive impact of incorporating a patient self-assessment that may necessitate additional interventions into routine care. DNP quality improvement projects assist in the development of strategies to increase best practices. The

implementation of educational interventions for skin cancer screening may lead to improved patient outcomes.

APPENDIX A:

EVIDENCE APPRAISAL TABLE

Project Question: In a primary care practice in Suffolk County, does a skin cancer screening education program focusing on this county's high rate of skin cancer and prevention measures, including the use of the SAMScore tool, result in increased PCP knowledge, increased likelihood for skin cancer screening, and likelihood of earlier dermatology referral practices?

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/Tools)	Findings
Bradley, H.B. (2012). Implementation of a skin cancer screening tool in a primary care setting: A pilot study.	To determine whether an educational program and skin cancer screening documentation tool would improve NP documentation of skin cancer screening and skin cancer patient education during physical examinations.	None identified	Quasi-experimental research study	N=6 NPs from a student health center at a college in the Northeast United States	Pre-and post-tests were conducted to assess how NP's documentation principles changed based on the educational component they completed in the study.	A 223.4% increase in proper documentation of skin cancer education and findings was reported after review of the charts following the implementation of the skin cancer screening documentation tool and education.
Henrikson, N. B., Morrison, C. C., Blasi, P. R., Nguyen, M., Shibuya, K. C., & Patnode, C. D. (2018). Behavioral counseling for skin cancer prevention: Evidence report and systematic review for the US	Systematic review of benefits and harms of behavioral counseling for skin cancer prevention to inform the US Preventive Services Task Force (USPSTF).	None Identified	Systematic review	N=20561 (21-trials in 27 publications were included).	Two investigators reviewed abstracts and full-text articles to extract evidence tables and data.	At 12-month follow-up in 1 adult trial (N=1356) that encouraged skin self-examination, there was no relevant difference between subjects diagnosed with melanoma in

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/Tools)	Findings
Preventive Services Task Force. *JAMA*, *319*(11), 1143-1157.						intervention and control groups.
Lakhani, N. A., Saraiya, M., Thompson, T. D., King, S. C., & Guy Jr, G. P. (2014). Total body skin examination for skin cancer screening among US adults from 2000 to 2010. *Preventive Medicine*, *61*, 75-80. doi: 10.1016/j.ypmed.2014.01.003	To increase data on the prevalence, correlates, and trends of total body skin examinations (TBSEs) among adults in the United States.	None identified	Meta-analysis	N=3 cancer control supplements	Data from three separate National Health Interview Survey (NHIS) cancer control supplements was analyzed by race/ethnicity, age, and skin cancer risk level from 2000 to 2010.	Prevalence of high to moderate risk patients having at least one TBSE increased from 14.5 in 2000 to 16.5 in 2005 to 19.8 in 2010 (P< 0.0001).
Oliveria, S. A., Heneghan, M. K., Cushman, L. F., Ughetta, E. A., & Halpern, A. C. (2011). Skin cancer screening by dermatologists, family practitioners,	To establish the issues that facilitate or impede U.S. primary care providers' and dermatologists' screening practices for skin cancer.	None identified	Randomized intervention study	N=2999 US dermatologists, family practitioners, and internists	Mixed-mode electronic and postal survey delivery for a period of 8-months.	Dermatologists (N=522, 81.3%) reported performing full-body skin examinations on patients compared to family practitioners

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/Tools)	Findings
and internists: barriers and facilitating factors. *Archives of Dermatology*, *147*(1), 39-44. doi: 10.1097/CEJ.0b013e328353ed68						(N=333, 59.6%) (P< .05) or internists (N=243, 56.4%) (P, .05). Time constraints, competing comorbidities, and patient embarrassment were the top three reported barriers.
Quéreux, G., N'Guyen, J. M., Cary, M., Jumbou, O., Lequeux, Y., & Dreno, B. (2012). Validation of the Self-Assessment of Melanoma Risk Score for a melanoma-targeted screening. *European Journal of Cancer Prevention*, *21*(6), 588-595. doi: 10.1097/CEJ.0b013e328353ed68	To assess the effectiveness of a targeted screening based on self-selection of high-risk individuals with the SAMScore.	None identified	Prospective study	N=7977 (N=2404 high-risk patients)	Utilizing a logistics model, patients filled out questionnaires	For the N=2404 high-risk patients, histologically proven melanoma was screened in 10 cases. The SAMScore efficiency assessed was equal to 11.54 (P= 0.0016).

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/Tools)	Findings
Rat, C., Grimault, C., Quereux, G., Dagorne, M., Gaultier, A., Khammari, A., ... & Nguyen, J. M. (2015). Proposal for an annual skin examination by a general practitioner for patients at high risk for melanoma: a French cohort study. *BMJ Open*, *5*(7), e007471.	To determine if receiving a mailed invitation to a general practitioner (GP) annual skin examination for melanoma was efficacious for high-risk patients.	None identified	Prospective cohort study	N=3897 patients at elevated risk of melanoma (identified using the SAMScore)	Participants were sent invitations by mail to consult their GP for an annual skin examination.	N=3745 received mailed invitations, 61% underwent skin examinations. Patients who were referred to dermatology
Rat, C., Quereux, G., Riviere, C., Clouet, S., Senand, R., Volteau, C., ... & Nguyen, J. M. (2014). Targeted melanoma prevention intervention: a cluster randomized controlled trial. *The Annals of Family Medicine*, *12*(1), 21-	To assess the effect targeted interventions to decrease the risk and increase early detection of melanoma.	None identified	Pilot clustered randomized control trial	N= 173	Self-Assessment Melanoma Risk Score (SAMScore)	Compared with control group, intervention patients were more likely to correctly identify their elevated risk of melanoma (71.1% vs 42.1%, P= .001). Intervention patients had higher levels of prevention

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/Tools)	Findings
28. doi: 10.1370/afm.1600						behaviors (less likely to sunbathe 24.7% vs 40.8%, P= .048; more likely to perform skin self-examinations within one year 52.6% vs 36.8%, P= .029).
Rat, C., Quereux, G., du Sorbier, M. M., Gaultier, A., Bonnaud-Antignac, A., Khammari, A., ... & Nguyen, J. M. (2014). Patients at elevated risk of melanoma: Individual predictors of non-compliance to general pracitioner referral for a dermatologist consultation. *Prevent ive Medicine*, *64*, 48-53.	To evaluate the completion of a consultation with a dermatologist by high-risk melanoma patients following referral by a GP and establish personal non-compliance predictors.	Health Belief Model	Pilot study	N=1506 high risk patients (selected from SAMScore)	Survey of patients identified as high-risk who were referred to a dermatologist consultation measuring their compliance of attendance or scheduling an appointment over a 4-month period.	Referral compliance was 58.4%. Factors associated with non-compliance included: unclear advice to consult from GP; no previous cancer screening participation; lack of knowledge of melanoma being a cancer; lack of time, delays in accessing, or forgetting to make an appointment.

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/Tools)	Findings
Rat, C., Quereux, G., Grimault, C., Gaultier, A., Khammari, A., Dreno, B., & Nguyen, J. M. (2015). Melanoma incidence and patient compliance in a targeted melanoma screening intervention. One-year follow-up in a large French cohort of high-risk patients. *European Journal of General Practice*, *21*(2), 1-7	To evaluate a targeted melanoma screening intervention by measuring the melanoma incidence and patient compliance with the screening.	None identified	Prospective cohort study one-year follow up	N=3923 high-risk melanoma patients by 78 PCPs using the SAMScore	PCPs utilized the SAMScore to identify high risk of melanoma patients, referring them to a dermatologist. Data was analyzed retrospectively for patient compliance with the clinical pathway.	57.9% of patients referred to Dermatology attended the consultation. Patient attendance increased when the PCP provided a name of a specific dermatologist (OR= 2.15, 95% CI: 1.51-3.09).
Rat, C., Quereux, G., Grimault, C., Fernandez, J., Poiraud, M., Gaultier, A., ... & Nguyen, J. M. (2016). Inclusion of populations at risk of advanced melanoma in an opportunistic targeted screening	To determine inclusion rates of at risk for advanced melanoma populations by GPs in a screening pilot endeavor.	None identified	Cross-sectional database study	N=2711	Data extracted from the French national healthcare insurance records in 2011 for a 6-month period.	Melanoma screening inclusion criteria revealed disparities as screenings were done less often in patients at risk of advanced cancer.

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/Tools)	Findings
project involving general practitioners. *Scandinavian Journal of Primary Health Care*, *34*(3), 286-294.						
Usher-Smith, J. A., Emery, J., Kassianos, A. P., & Walter, F. M. (2014). Risk prediction models for melanoma: a systematic review. *Cancer Epidemiology and Prevention Biomarkers*, cebp-0295.	Systematic review of melanoma prediction risk models.	None identified	Systematic review	N=4141 papers (including 25 risk models)	Literature searches including 4141 papers; 25 risk models included.	Little difference was found in the performance of models requiring a healthcare professional and self-assessment models. Future research focusing on the validation of existing models is warranted.
Wu, Y. P., Aspinwall, L. G., Conn, B. M., Stump, T., Grahmann, B., & Leachman, S. A. (2016). A systematic review of interventions to improve adherence	To assess the efficacy of melanoma prevention behavioral interventions aimed at people with high risk from personal and/or family	None identified	Systematic review	N=20 articles	Literature searches in five databases including 20 articles describing 14 interventions focusing on melanoma prevention for high risk patients	36% (5 out of 14) of interventions targeted uptake of total body skin examinations (60% led to improvements).

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/Tools)	Findings
to melanoma preventive behaviors for individuals at elevated risk. *Preventive Medicine*, *88*, 153-167.	history.					

APPENDIX B:

SITE AUTHORIZATION

SOUTHBAY MEDICAL CARE PC
625 Montauk Hwy
Center Moriches, NY 11934

May 17, 2019

University of Arizona Institutional Review Board
c/o Office of Human Subjects
1618 E Helen St
Tucson, AZ 85721

Please note that Ms. Stefany Cimino, UA Doctor of Nursing Practice student, has permission of the Southbay Medical Care PC to conduct a quality improvement project at our facility for her project, "Increasing Use of Skin Cancer Screening Tools in Primary Care."

Ms. Cimino will conduct a survey of health care providers at Southbay Medical Care PC. She will recruit providers through email. The email will provide a description of the project, what they will be asked to do, the time involved, and a link to the online survey. Ms. Cimino's activities will be completed by 8/1/19.

Ms. Cimino has agreed to provide to my office a copy of the University of Arizona Determination before she recruits participants. She also will present aggregate results to the providers.

If there are any questions, please contact my office.

Signed,

M. Ortiz

Practice Manager
Southbay Medical Care PC

V 2013-01

APPENDIX C:

DISCLOSURE FORM

INCREASING USE OF SKIN CANCER SCREENING TOOLS IN PRIMARY CARE

Stefany Cimino

The purpose of this project is to increase the Primary Care Provider's use of skin cancer screening and knowledge of skin cancer screening tools.

If you choose to take part in this project, you will be asked to complete a pre-test, view an educational PowerPoint, and post-test. It will take approximately 45 minutes to complete the tests and PowerPoint. There are no foreseeable risks associated with participating in this project and you will receive no immediate benefit from your participation. Test responses are anonymous.

If you choose to participate in the project, participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw at any time from the project. In addition, you may skip any question that you choose not to answer. By participating, you do not give up any personal legal rights you may have as a participant in this project.

For questions, concerns, or complaints about the project, you may call Stefany Cimino, RN, BSN at 631-487-4959, scimino@email.arizona.edu

APPENDIX D:

PRE-TEST

DEMOGRAPHICS:

Age:

Licensed in NY as: MD APRN PA

Specialty:

Years in Practice:

BASELINE SKIN CANCER SCREENING ASSESSMENT (pre-test)

Baseline skin cancer knowledge, current skin cancer screening methods and current dermatology referral practices pre-test.

1. In the United States, the incidence rate for new cases of melanomas of the skin is:

1 = 6 out of 100,000 2 = 16 out of 100,000 3 = 22 out of 100,000 4=26 out of 100,000

2. In Suffolk County, the incidence rate for developing melanoma is:

1 = 6 out of 100,000 2 = 16 out of 100,000 3=22 out of 100,000 4 = 26 out of 100,000

3. A small flesh-colored bump may be a sign of:

1 = Basal Cell Cancer 2 = Squamous Cell Cancer 3 = Melanoma 4=Discoid Eczema

4. A sore that has reopened after it healed may be a sign of:

1 = Basal Cell Cancer 2 = Squamous Cell Cancer 3 = Melanoma 4=Impetigo

5. A large amount of freckles on bilateral arms is a risk factor for:

1 = Basal Cell Cancer 2 = Squamous Cell Cancer 3 = Melanoma 4=Lentigo

6. I routinely ask patients about skin changes:

At every visit Once a year Never ask

7. I routinely ask patients about their sun protection methods:

At every visit Once a year Never ask

8. The percentage of patients I refer to dermatology on a yearly basis for consultation on suspicious lesions is approximately:

0% 25% 50% 75% 100%

9. I routinely have patients complete self-assessment skin questionnaires:

Yes No

APPENDIX E:

EDUCATION MODULE OUTLINE

Skin Cancer Screening in Primary Care

Stefany Cimino

Learning Module Overview and Goals

Overview

- Focusing on skin cancer screening in Primary Care:
  - General Information
    - Skin CA incidence and types
    - Skin CA risk factors
    - Melanoma specific info
  - Current Practice
    - ABCDE Rule
  - Suggested New Practice
    - SAMScore Screening

Learning Goals

- Completing this education session will enable you to:
  - Differentiate between 3 types of skin cancer
  - Identify 2 skin cancer risk factors
  - Name 1 melanoma fact
  - Understand how to utilize SAMScore Screening

Skin Cancer Types and Incidence

Types

- Basal Cell Cancer (BCC)
- Squamous Cell Cancer (SCC)
- Melanoma

Melanoma Incidence

- 22.1 out of 100,000 individuals in the United States in 2015 (CDC, n.d.)
- 26.5 out of 100,000 individuals in Suffolk County from 2011 to 2015 (CDC, 2017)
  - Rate of mortality is 2.7 out of 100,000 individuals in Suffolk County during same time frame (CDC, 2017)

Basal Cell Carcinoma

- Considered most common form of skin cancer
- Typically appear as a small, flesh-colored bump
- May occur anywhere on body
  - Most frequently found on head, neck, and arms
- Risk for invasion of surrounding tissue or growth of BCC into nerves and bones
  - Early diagnosis and treatment is important

(American Academy of Dermatology [AAD], 2018)

Squamous Cell Carcinoma

- 2nd most common type of skin cancer
- Appears as a firm red bump, scaly patch, or a sore that re-opens after it heals
- Risk of disfigurement and damage
  - Early diagnosis and treatment may prevent spread of SCC to other areas of the body

(AAD, 2018)

Melanoma

- Considered the deadliest form of skin cancer
- Typically develops in a mole or from a new patch on the skin
- Majority originate from ultraviolet damaged skin cells
  - Exposure to sun and indoor tanning beds increase risk

(AAD, 2018)

Skin Cancer Risk Factors

- Skin exposed to ultraviolet rays of the sun or indoor tanning beds
- Diagnoses spanning all ages, races, ethnic groups, and geographical locations
  - Fair skinned individuals prone to sunburn have higher general risk

(AAD, 2018)

Melanoma

- 10,000 deaths annually (American Cancer Society [ACS], 2018)
- 76,380 diagnosed yearly (ACS, 2018)
- 22.1 out of 100,000 individuals in NY state (CDC, n.d.)
- 26.5 out of 100,000 individuals in Suffolk County (New York State Department of Health, 2018)
- 59% increase in melanoma risk with tanning bed use prior to age 35 years old (American Academy of Dermatology [AAD], 2018)
  - This risk increases with each tanning bed use
- 80% increase in melanoma risk for individuals with five or more blistering sunburns before age 20 (AAD, 2018)

Current Practice: ABCDE Rule

- Assess skin lesion for:
  - Asymmetry
  - Border irregularity
  - Color that is not uniform
  - Diameter >6mm
  - Evolving over time

(United States Preventive Services Task Force [USPSTF], 2016)

Current Practice: Total Body Skin Examination (TBSE)

- According to the National Cancer Institute [NCI] (2018), visual examination of the skin is considered the only widely proposed screening procedure for skin cancer.
- This includes both visual examination of the skin by a clinician and patient self-examination of the skin (NCI, 2018).

Suggested New Practice: Self Assessment of Melanoma Risk Score (SAMScore)

- A validated screening tool created in France by the West Melanoma Network (WMN)
  - WMN is comprised of dermatologists, general practitioners, and nurses involved in skin cancer prevention and treatment
- Design of questions is meant for individuals without any medical knowledge

(Quereux et al., 2012)

Suggested New Practice: Self Assessment of Melanoma Risk Score (SAMScore)

- Questionnaire contains seven questions using established risk factors for melanoma:
  1. Skin phototype
  2. Number of melanocytic nevi
  3. Tendency to develop freckling of the skin
  4. Sunburn during infancy
  5. Residing in a country at a low altitude
  6. Personal history of pervious melanoma of the skin
  7. History of melanoma of the skin in a first-degree relative

(Quereux et al., 2012)

Suggested New Practice: Self Assessment of Melanoma Risk Score (SAMScore)

- Patients are considered high risk if at least one of the following three criteria is met:
  - Three risk factors are present
  - A patient under the age of 60 presents with over 20 melanocytic nevi on both arms
  - A patient older than the age of 60 with a tendency to have freckling of the skin

(Quereux et al., 2012)

SAMScore Screening Tool

Answer each question by circling the corresponding option:

1. What phenotype of skin do you have?
   - Skin phenotype I: very fair skin, blond or red hair, light eyes (blue or green), never tan and always sunburn after sun exposure
   - Skin phenotype II: fair skin, blond or light-brown hair, light eyes (blue or green), usually sunburn
   - Skin phenotype III: deep skin, brown hair, light to medium eye colour
   - Skin phenotype IV: olive skin, dark-brown hair, brown eyes
   - Skin phenotype V: brown skin, black hair, black eyes
   - Skin phenotype VI: black skin, black hair, black eyes
2. Do you have freckles? Yes / No
3. Approximately how many moles do you have on both arms? More than 20 / Fewer than 20
4. Have you had one or more episodes of a severe blistering sunburn during your childhood or teenage years? Yes / No
5. Have you lived in a country where the level of sunshine is high (Africa, French West Indies, the southern United States, Australia, etc.) for more than one year? Yes / No
6. Have you been diagnosed with melanoma (a skin cancer arising in melanocytes, the skin cells that make skin pigment) in the past? Yes / No
7. Have any of your first-degree relatives (parents, children, brother or sister) ever had melanoma? Yes / No / Don't know

According to the SAMScore, a patient is considered at elevated risk for melanoma if at least one of the following 3 criteria is met:

- First criterion: The presence of at least 3 risk factors among the following 7 risk factors: skin phenotype I or II, a freckling tendency, >20 melanocytic nevi on both arms, experienced severe sunburn during their childhood or teenage years, residing in a country at low latitude, a history of previous melanoma, and a history of melanoma in a first-degree relative.
- Second criterion: Under 60 years of age and >20 melanocytic nevi on both arms.
- Third criterion: Sixty years of age or older and a freckling tendency.

Summary

- 3 Types of Skin Cancer
  - Basal Cell - BCC
  - Squamous Cell - SCC
  - Melanoma
- 26.5 out of 100,000
  - Suffolk County Incidence of Melanoma
- SAMScore Screening
  - Patient self assesses Melanoma risk
  - Scores indicate need to perform total body skin exam or refer to dermatology

Thank You!

- Your time and efforts in completing this education project is deeply appreciated.

References

American Academy of Dermatology (2018). [illegible]
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Centers for Disease Control and Prevention (n.d.). [illegible]
Centers for Disease Control and Prevention (2017a). [illegible]
National Cancer Institute (2018a). [illegible]
New York State Department of Health (2018). [illegible]
Quéreux, G., [illegible] (2012). [illegible]

APPENDIX F:

POST-TEST

Post education program skin cancer knowledge, current skin cancer screening methods and current dermatology referral practices post-test.

1. In the United States, the incidence rate for new cases of melanomas of the skin is:

1 = 6 out of 100,000 2 = 16 out of 100,000 3 = 22 out of 100,000 4=26 out of 100,000

2. In Suffolk County, the incidence rate for developing melanoma is:

1 = 6 out of 100,000 2 = 16 out of 100,000 3 = 22 out of 100,000 4=26 out of 100,000

3. A small flesh-colored bump may be a sign of:

1 = Basal Cell Cancer 2 = Squamous Cell Cancer 3 = Melanoma 4=Discoid Eczema

4. A sore that has reopened after it healed may be a sign of:

1 = Basal Cell Cancer 2 = Squamous Cell Cancer 3 = Melanoma 4=Impetigo

5. A large amount of freckles on bilateral arms is a risk factor for:

1 = Basal Cell Cancer 2 = Squamous Cell Cancer 3 = Melanoma 4=Lentigo

6. I intend to routinely ask patients about skin changes:

At every visit Once a year Never ask

7. I intend to routinely ask patients about their sun protection methods:

At every visit Once a year Never ask

8. The percentage of patients I intend to refer to dermatology on a yearly basis for consultation on suspicious lesions is approximately:

0% 25% 50% 75% 100%

9. After completing this skin cancer screening education program, how likely are you to have every patient complete the SAMScore:

Highly Unlikely	Unlikely	Neutral	Likely	Highly Likely
1	2	3	4	5

10. The PowerPoint education material was easy to understand.

Strongly Disagree	Disagree	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5

11. Any changes you would recommend for the PowerPoint education material?

APPENDIX G:

THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER

THE UNIVERSITY OF ARIZONA
Research, Discovery & Innovation

Human Subjects Protection Program

1618 E. Helen St.
P.O Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
http://rgw.arizona.edu/compliance/home

Date:	July 11, 2019
Principal Investigator:	Stefany Cimino
Protocol Number:	1907795596
Protocol Title:	Increasing Use of Skin Cancer Screening Tools in Primary Care
Determination:	Human Subjects Review not Required

Documents Reviewed Concurrently:

Data Collection Tools: *June26_Cimino_Post survey.docx*
Other Approvals and Authorizations: *June2019_Site_Authorization.pdf*

Regulatory Determinations/Comments:

- Not Research as defined by 45 CFR 46.102(l): As presented, the activities described above do not meet the definition of research cited in the regulations issued by U.S. Department of Health and Human Services which state that "Research means a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge. Activities that meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program that is considered research for other purposes. For example, some demonstration and service programs may include research activities. For purposes of this part, the following activities are deemed not to be research."

The project listed above does not require oversight by the University of Arizona.

If the nature of the project changes, submit a new determination form to the Human Subjects Protection Program (HSPP) for reassessment. Changes include addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the study activity. Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).

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