NURSE PRACTITIONERS’ SKIN CANCER PREVENTION COUNSELING TO ADOLESCENTS

by

Maxine Ann Lucas

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SIGNED: __Maxine Ann Lucas__________________
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ABSTRACT

Background: Skin cancer is the most common cancer worldwide and one of the most preventable cancers. Despite prevention efforts, skin cancer incidence continues to rise among adolescents. This is especially a challenge for the state of Arizona, which has a high incidence of skin cancer. The inconsistent evidence-based practice guidelines for skin cancer prevention create challenges for counseling adolescents. The knowledge, attitudes, and practices of primary skin cancer prevention by nurse practitioners who care for adolescents is unknown in Arizona or elsewhere in the U.S.

Purpose: This doctor of nursing practice project investigates knowledge, attitudes, and practices of skin cancer primary prevention by Arizona nurse practitioners caring for adolescents on an outpatient basis and determines congruency of their counseling with primary prevention guidelines.

Methods: The design is descriptive cross-sectional. An online survey using Qualtrics software was distributed via professional listservs to eligible Arizona nurse practitioners currently in practice. Participants’ knowledge of skin cancer, skin cancer prevention, and current practice guidelines and recommendations were assessed using multiple choice items. Participants’ attitudes regarding counseling for skin cancer prevention within the adolescent population and current nurse practitioner behaviors, in relation to current practice guidelines, were measured using Likert-type scales.

Outcomes: Thirty-nine nurse practitioners responded to the online survey. Participant overall knowledge regarding skin cancer was moderate to low, and less was known about skin cancer in adolescents. Despite participants’ overall positive attitudes toward skin cancer
prevention, they reported low rates of skin cancer prevention counseling for adolescents in practice. Skin cancer prevention recommendations, identified by participants as used in practice, were not congruent with established clinical guidelines on counseling for primary prevention of skin cancer in adolescents.
CHAPTER I: INTRODUCTION

This doctor of nursing practice project investigates knowledge, attitudes, and practices of skin cancer prevention by Arizona nurse practitioners toward adolescents (12-19 years of age) and determines congruency of counseling with existing primary prevention guidelines. This project provides insight into current practice behaviors and identifies knowledge deficits and barriers to preventive counseling practice. The information gained provides a foundation for improvement in future practices in skin cancer prevention.

Background Knowledge

Skin cancer is the most common cancer worldwide, affecting all races, ethnicities, and ages. It is also one of the most preventable cancers, but the incidence is on the rise. More than 3 million Americans are diagnosed with skin cancer each year (Centers for Disease Control and Prevention [CDC], 2013; U.S. Preventive Services Task Force [USPSTF], 2012; World Health Organization [WHO], 2014b). Despite inconsistent reporting, an upward trend of non-melanoma skin cancer (NMSC) has been observed in most parts of Europe, Canada, Australia, and the United States, with a predicted doubling of NMSC incidence over the next 30 years (National Cancer Institute [NCI], 2014b). The NCI (2014c) estimates that there will be 2 million new cases of NMSC within the United States in 2014.

In addition, the incidence of melanoma has seen a gradual increase among America’s youth since 1975, with current adolescents now having a 2.07% lifetime risk of having a melanoma diagnosis and a 0.32% risk of dying from the cancer (NCI, 2014c). The American Cancer Society [ACS] (2014) estimates that 5,330 new cases of a cancer will be diagnosed in adolescents aged 15 to 19 years in 2014, with 6% of these cancers attributable to melanoma.
Melanoma is now one of the top three cancers affecting persons younger than 20 years of age (NCI, 2014a). Approximately 10,000 skin cancer related deaths are estimated to occur nationally in 2014, with 90% of those being attributed to melanoma (NCI, 2014c). This increased incidence of skin cancer among our nation’s youth may have an impact on skin cancer related morbidity, mortality, and health care cost.

Both melanoma and NMSC result in a significant number of years of potential life lost and increased indirect and direct medical costs. Despite the increasing incidence of melanoma, the annual age adjusted death rate has stayed stable over time within the United States (Bristow, Casil, Sorvillo, Basurto-Davila, & Kuo, 2013; NCI, 2014c). However, the annual total productivity loss from melanoma in 2008 is estimated at $3.9 billion (Bristow, et al., 2013). This estimate is notably higher among younger age groups, who are disproportionately affected by melanoma (Bristow, et al.; Senerchia, Ribeiro & Rodriguez-Galindo, 2014). NMSC is less fatal than melanoma but it contributes to significant morbidity, disfigurement, and health care costs associated with skin cancer (Guy & Ekwueme, 2011; NCI, 2014c). Despite inconsistent reporting of NMSC, the United States annual estimated cost is $650 million per year (Chen et al., 2001). This is expected to increase as recent reviews have found an increase in incidence of NMSC in younger populations (Christenson et al., 2005).

Skin cancer can be categorized as melanoma or NMSC (Gordon, 2013). Sub-categories of NMSC include basal and squamous cell carcinoma. Basal cell carcinoma (BCC) is a malignant neoplasm of the epithelium originating from basal cells (Gordon, 2013). BCC generally begins as a small round nodule with frequent ulceration, crusting, and bleeding (Gordon, 2013; Kuijpers, Thissen, & Neumann, 2002). Although metastatic spread is rare, BCC
can result in local tissue destruction and disfigurement (Kuijpers, et al., 2002). Squamous cell carcinoma (SCC) is a malignant neoplasm arising from epidermal keratinocytes, usually confined to the epidermis (Gordon, 2013). Although SCC has a varying clinical presentation, it often appears as a papule, plaque, or nodule arising from a premalignant skin lesion (Gordon, 2013). SCC invades local tissues but also has the potential to invade surrounding structures and metastasize. Melanoma is a malignant neoplasm originating from epidermal melanocytes (ACS, 2013). In comparison with NMSC, melanoma has a higher affinity for invasive spread and subsequently, increased mortality (ACS, 2013). Melanoma often presents as a change in the shape, size, color, or feel of an existing nevus or as a new nevus with asymmetry, border irregularity, uneven color, large diameter, or changes over time (NCI, 2014e). The ABCDE criteria, asymmetry, border irregularity, uneven color, large diameter, and evolution of the nevus, has been traditionally used to identify lesions with potential for melanoma. However, recent research has shown that additional criteria might be necessary for identification of potential lesions in pediatric populations (Cordoro, Gupta, Frieden, McCalmont, & Kashani-Sabet, 2013).

It is well documented that a main causative factor in skin cancer development is exposure to ultraviolet radiation (UVR) (Armstrong & Kricker, 2001; CDC, 2014; Gilchrest, Eller, Geller & Yaar, 1999). UVR is a known carcinogen that causes DNA damage, gene mutations, immunosuppression, oxidative stress, and inflammatory responses (Gordon, 2013). UVR exposure during childhood, making up approximately 25% of lifetime UVR exposure, has been established as a major risk factor for the development of skin cancer in adulthood (Maguire-Eisen, 2013; Wehner et al., 2014). In addition, childhood sunburns have been shown to increase melanoma risk later in life (ACS, 2013). Despite the warning from the International Agency for
Research on Cancer (IARC) of UVR and UVR emitting devices as being ‘carcinogenic to humans’, intentional exposure to UVR among adolescents continues to occur and has increased drastically (Davis, Cokkinides, Weinstock, O’Connell & Wingo, 2002; Wehner, et al.).

Systematic reviews note other melanoma risk factors, which are listed in Table 1.

Table 1. *Risk Factors for Melanoma*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal History of Any Skin Cancer</td>
<td>2.9-8.5</td>
</tr>
<tr>
<td>Family History of Melanoma</td>
<td>2.1-70</td>
</tr>
<tr>
<td>History of Multiple Sunburns</td>
<td>1.4-2.5</td>
</tr>
<tr>
<td>Increased Number of Nevi</td>
<td>1.16-11</td>
</tr>
<tr>
<td>Red Hair</td>
<td>2.5</td>
</tr>
<tr>
<td>Fair Complexion</td>
<td>1.7</td>
</tr>
<tr>
<td>Light Colored Eyes</td>
<td>1.6</td>
</tr>
<tr>
<td>Male Gender</td>
<td>1.74</td>
</tr>
</tbody>
</table>

Preventive Behaviors for Adolescents

Adolescence is a dynamic period of psychosocial, physical, and cognitive transition from childhood to adulthood, during which time behavioral patterns and lifestyle choices are established (CDC, 2011). Adolescence occurs at an individual pace and each professional organization defines adolescence differently without a standard age range. For purposes of this doctor of nursing practice project, adolescence is defined as 12-19 years of age, in an effort to encompass the majority of adolescent ages defined by various professional organizations, including the American Academy of Pediatrics [AAP], WHO, CDC, American Academy of Family Physicians [AAFP], and the National Institutes of Health [NIH]. During this time of development, decision making and behaviors are influenced by peers, family members, communities, and institutions, resulting in either risk taking or preventive health behaviors (Garzon & Dunn, 2013). Successful development of healthy lifestyle choices and behaviors in adolescence provides a foundation for a healthy adult life (Garzon & Dunn, 2013). Because of the developmental milestones and impact interventions may have on this population, education and encouragement of preventive behaviors are essential for this age group.

Most skin cancer preventive behavior recommendations are aimed at the reduction of UVR exposure, summarized in Table 2 (Armstrong & Kricker, 2001; CDC, 2014; Gilchrest, et al., 1999). Although studies of skin cancer preventive behaviors do not have sufficient evidence to support their use, the benefit of practicing the behavior greatly outweighs the harm (NCI, 2014d). Therefore, several professional organizations, including American Academy of Dermatology [AAD], AAP, and AAFP, encourage sun-protective strategies. Despite lacking
evidence supporting individual preventive behaviors, evidence does support educating patients on risks associated with sun exposure and sunburn, as well as preventive measures (NCI, 2014d).

Table 2. *Recommendations for the Prevention of Skin Cancer in Adolescents*

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Broad-Spectrum, Water-Resistant Sunscreen Use of SPF 30 or Greater</td>
</tr>
<tr>
<td>- Use on all exposed areas of the body</td>
</tr>
<tr>
<td>- Apply generously and uniformly</td>
</tr>
<tr>
<td>- Use enough to fill a shot glass (1oz)</td>
</tr>
<tr>
<td>- Apply 15-30 minutes before going outdoors</td>
</tr>
<tr>
<td>- Reapply every 2 hours</td>
</tr>
<tr>
<td>Seek Shade</td>
</tr>
<tr>
<td>Avoid Sun Exposure Between 10am-4pm</td>
</tr>
<tr>
<td>Wear Protective Clothing</td>
</tr>
<tr>
<td>- Long-sleeved shirt</td>
</tr>
<tr>
<td>- Pants</td>
</tr>
<tr>
<td>- Wide-brimmed hat</td>
</tr>
<tr>
<td>- Sunglasses</td>
</tr>
<tr>
<td>- Avoid Tanning Beds</td>
</tr>
</tbody>
</table>

Local Problem

Skin cancer in Arizona is of important concern, as the population is disproportionately affected by this cancer. As a result of being in a region of the United States with a high level of UVR, the incidence of NMSC in Arizona is among the highest in the world (Harris, Griffith & Moon, 2001). Additionally, the incidence of melanoma in Arizona has seen an upward trend with the highest statewide incident rate of 27.2 per 100,000 seen in Coconino County. This is significantly elevated in comparison with the national melanoma incident rate of 21.3 per 100,000 (NCI, 2014c). One hundred seventy one Arizonans die of melanoma every year, a rate higher than the national melanoma mortality rate. This rate continues to increase by approximately 1% per year (Environmental Protection Agency, 2011; NCI, 2012). In response to these statistics, several national and statewide prevention campaigns, summarized in Table 3, have been initiated in an effort to raise awareness and educate the public on the prevention of skin cancer.
<table>
<thead>
<tr>
<th>Campaign Name</th>
<th>Organization</th>
<th>Purpose</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>SunWise</td>
<td>United States Environmental Protection Agency</td>
<td>Used by schools and communities to educate kids (5-15 years) and caregivers to prevent overexposure to the sun.</td>
<td>Most widely-used health and environmental education program for sun safety. Available in all 50 states (Kyle et al., 2008).</td>
</tr>
<tr>
<td></td>
<td>Arizona Public Schools (mandatory education)</td>
<td></td>
<td>Available in all 50 states (Kyle et al., 2008).</td>
</tr>
<tr>
<td>The Burning</td>
<td>Centers for Disease Control and Prevention</td>
<td>Communication initiative to decrease ultraviolet radiation exposure from the sun/tanning beds.</td>
<td>Available in all 50 states (Kyle et al., 2008).</td>
</tr>
<tr>
<td>Truth</td>
<td></td>
<td></td>
<td>Available in all 50 states (Kyle et al., 2008).</td>
</tr>
<tr>
<td>Baby Hat Program</td>
<td>The Skin Cancer Institute at the University of Arizona</td>
<td>Provides babies with wide-brimmed hats and sun cancer prevention information at low cost.</td>
<td>Has provided and distributed over 3,000 sunhats and skin cancer prevention information.</td>
</tr>
<tr>
<td>Project SASS</td>
<td>The Skin Cancer Institute at the University of Arizona</td>
<td>Provides age-appropriate peer education sessions for Tucson middle and high schools. Sessions led by trained University of Arizona students in the health sciences. Currently being expanded to Maricopa County.</td>
<td>A survey of 468 students receiving Project SASS found that they had significantly better skin cancer knowledge, less appeal for tanned skin, decreased tanning behaviors, and more intention to be sun safe (Davis, Loescher, Rogers, Snyder &amp; Harris, 2014)</td>
</tr>
</tbody>
</table>
Table 3. *Current Skin Cancer Prevention Campaigns Continued*

<table>
<thead>
<tr>
<th>Campaign Name</th>
<th>Organization</th>
<th>Purpose</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHADE Foundation</td>
<td>The Children’s Skin Cancer Education &amp; Prevention Foundation</td>
<td>Skin cancer education and prevention through education of children, parents, educators, and communities throughout the USA.</td>
<td>Supports SunWise education in addition to other community fund raisers and skin cancer awareness.</td>
</tr>
</tbody>
</table>

Despite these efforts, America’s young population continues to have poor compliance with preventive practices (Eaton, et al., 2012). Suboptimal sunscreen use, sunburns, and tanning bed use are common among United States youth with 69% of adolescents reporting at least one sunburn during the last summer and only 10.8% reporting routine use of sunscreen (Buller, et al., 2011; Eaton, et al.). Additionally, 29.3% of high school students, the majority being white females, reported using indoor tanning devices within the past year (Basch, Basch, Rajan & Ruggles, 2014). Indoor tanning has become more common and accessible within Arizona. Glendale, Mesa, and Scottsdale have a higher tanning salon density (number of salons per 100,000 population) than the national average (Hoerster et al., 2009). These factors contribute to the increasing trends in Arizona’s incidence and mortality rates for melanoma and NMSC.

Advanced nursing practice is regulated by each state’s board of nursing. The State of Arizona supports the independent practice of nurse practitioners (Arizona State Board of Nursing [AZBN], 2013). Although each state has different regulations, advanced nursing practice is expanding throughout the nation. A greater demand for health care, specifically primary care, is currently occurring as health care reform increases medical care access and physicians are choosing to specialize (Dill, Pankow, Erikson, & Shipman, 2013). To meet this need, advanced practice nurses have become accepted primary care providers. Patients are receptive to this change and see nurse practitioners as accessible, easy to talk to, cost efficient, and personalized (Dill, et al., 2013). As more advanced practice nurses enter primary care in Arizona, primary prevention strategies, including those for skin cancer prevention, need to be addressed.

According to the National Sample Survey of Nurse Practitioners completed by the Health Resources and Services Administration [HRSA] (2014), there were 154,000 nurse practitioners
registered within the United States. The majority, more than 132,000, were nationally
credentialled with the most common specialty being Family Nurse Practitioner. Of those
credentialled, 127,000 of the nurse practitioners practicing within the United States were working
in direct patient care positions with more than half in primary care settings (HRSA, 2014).

According to the AZBN (2014), there are currently 5,002 licensed advanced nurse
practitioners in Arizona with the largest certification specialty being Family Nurse Practitioner
(2,767). There has been substantial growth in advanced nursing practice within the state: 3,520
nurse practitioners were counted in 2011 (Wilson, Harootunian, Sama & Johnson, 2012). Data
collected in 2011 by Wilson, et al., described the nurse practitioner population as 92% female,
80% Caucasian, and 71% 45 years of age or older. Sixty percent (60%) practice within
Maricopa County and 20% practice within Pima County. These two counties comprise over 80%
of Arizona’s nurse practitioner workforce (Wilson, et al., 2012). Arizona counties have a
significantly higher number of nurse practitioners per population than the national average, led
by Coconino county with 87.7 per 100,000 (Wilson, et al.). In addition, the counties containing
the most populous cities, Pima County and Maricopa County, have a higher rate of nurse
practitioners per population than the national average (73.9 per 100,000, 54.6 per 100,000, and
34 per 100,000 respectively) (Wilson, et al.).
Prevention Recommendations

Established skin cancer prevention clinical practice guidelines and recommendations provide a framework for this doctor of nursing practice project. Several organizations and researchers advocate that health care providers educate and promote sun safe health habits among their patients in order to reduce modifiable risk factors for skin cancer. Because skin cancer is one of the most preventable cancers, primary prevention strategies are essential for decreasing its incidence. Although most clinical practice guidelines, organizations, and researchers agree that some preventive skin cancer prevention counseling should be provided to their patients, there is no consensus on who should be counseled, when they should be counseled, and what information should be emphasized. The USPSTF Recommendation Statement (2012) states that children, adolescents, and young adults with fair skin, between the ages of 10-24 years, should be counseled about minimizing UVR exposure in an effort to decrease skin cancer. Exceeding this recommendation, the AAP (2011) advocates for providers to include advice about UVR exposure into health-supervision practices and incorporate UVR exposure advice into at least one health-maintenance visit per year beginning in infancy regardless of skin color. The AAD (2012) has an even broader recommendation that all populations receive skin cancer prevention counseling (See Table 4). In addition, other well-known organizations such as the Skin Cancer Foundation, American Cancer Society, and the National Council on Skin Cancer Prevention, do not offer clinical practice guidelines but rather suggestions for preventive measures, which vary based on the organization.
Table 4. Current Practice Recommendations

<table>
<thead>
<tr>
<th>Professional Organization</th>
<th>Practice Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Academy of</td>
<td>Provide behavioral counseling regarding avoidance of UVR and consistent sun protection practices for all populations.</td>
</tr>
<tr>
<td>Dermatology (2012)</td>
<td></td>
</tr>
<tr>
<td>American Academy of</td>
<td>Counsel children, adolescents, and young adult’s ages 10 to 24 years who have fair skin about minimizing their exposure to UVR to reduce risk for skin cancer.</td>
</tr>
<tr>
<td>Family Physicians (2012)</td>
<td></td>
</tr>
<tr>
<td>American Academy of</td>
<td>Incorporate advice about UVR exposure into health-supervision practices; Incorporate UVR exposure advice into at least 1 health-maintenance visit per year beginning in infancy.</td>
</tr>
<tr>
<td>Pediatrics (2011)</td>
<td></td>
</tr>
<tr>
<td>National Cancer Institute (2014)</td>
<td>Educate patients on risks and protective strategies (but evidence is lacking to support routine counseling).</td>
</tr>
<tr>
<td>USPSTF (2012)</td>
<td>Counsel children, adolescents, and young adults with fair skin between the ages of 10-24 about minimizing UVR exposure</td>
</tr>
</tbody>
</table>

Similar recommendations from these organizations include educating patients on avoiding sun tanning, avoiding indoor tanning, wearing protective long-sleeve clothing, wearing hats, seeking shade, using sunscreen, wearing sunglasses, and avoiding outdoor activities during midday hours (AAP, 2011; ACS, 2013; CDC, 2014; USPSTF, 2012). In a systematic review of the literature, the USPSTF (2012) rated most of these counseling interventions to be of low intensity, tailored to the individual, and able to be completed during a primary care visit with no known harms.

Because of inconsistencies in primary prevention guidelines and counseling suggestions, current actions in practice by nurse practitioners are unknown. Previous literature has shown that nurse practitioners face several barriers to providing skin cancer prevention counseling to
their patients. These include provider attitude and beliefs about counseling, confusion regarding scope of practice, lack of national guidelines, lack of knowledge of skin cancer, and time constraints (Christos, Oliveria, Masse, McCormick & Halpern 2004; Johnson, et al., 2006; Maguire-Eisen & Frost, 1994). Understanding barriers to preventive counseling practice and researching current practice behaviors of nurse practitioners is essential to understanding the current state of practice and identifying areas for improvement. This is a pressing issue as the incidence of skin cancer continues to rise within the adolescent population. Understanding current practice will not only give insight into this issue, but will also provide a foundation for further research to develop effective skin cancer prevention interventions for adolescents, as suggested by the USPSTF (2012).

**Purpose and Aims**

The aim of this doctor of nursing practice project is to describe current skin cancer preventive counseling for adolescents by nurse practitioners practicing within the State of Arizona. Specific factors affecting the nurse practitioner’s role in skin cancer prevention were investigated, including knowledge of skin cancer prevention, attitudes pertaining to skin cancer prevention counseling, and self-reported behaviors in practice. The data collected from this project provides insight into current practice, acting as a foundation for future improved preventive practices. Understanding current practice behaviors in relation to evidence based guidelines will help to identify knowledge deficits and barriers to preventive practice. This information will support future research, practice guidelines, and continuing education development.
In summary, it is the nurse practitioner’s responsibility to “identify, develop, implement, and evaluate a plan of care for a patient to promote, maintain, and restore health” (AZBN, 2013). Primary prevention, within the context of skin cancer, is significant as most skin cancers can be prevented. Despite skin cancer being one of the most preventable cancers, incidence continues to rise in the adolescent population. In response to this increase, various professional organizations have released evidence based guidelines and position statements regarding counseling as a preventive measure against skin cancer. However, these guidelines and statements are incongruent. Also inconsistent in nature, but reflective of a recent interest in skin cancer prevention, are current sociopolitical changes within the United States. Several states have recently implemented laws restricting tanning bed use by minors, as well as instituted new sun safe programs within the public school system. Arizona, with its climate, sunny days, and geographic location, should be a leader in skin cancer prevention and act as a role model for the nation.

**Study Questions**

This doctor of nursing practice project investigated the knowledge, attitudes, and practices of skin cancer primary prevention by Arizona nurse practitioners practicing on an outpatient basis and whose practice includes the adolescent population. This doctor of nursing practice project determined congruency of counseling with primary prevention guidelines. The main questions guiding this doctor of nursing practice project were:

1. What is nurse practitioners’ overall skin cancer knowledge?
2. What attitudes do nurse practitioners have toward skin cancer prevention and skin cancer prevention counseling?
3. What skin cancer preventive counseling is currently being recommended by nurse practitioners for their adolescent clients?

An exploratory question was: Are the nurse practitioner recommendations congruent with any existing practice guidelines for skin cancer prevention?
CHAPTER II: METHODS

Ethical Issues

This doctor of nursing practice project upheld ethical standards. The overall project and survey was approved by the University of Arizona Institutional Review Board (IRB) prior to implementation (see Appendix A). The survey distributed to Arizona nurse practitioners included consent to participate prior to the start of the survey. As the survey was voluntary, the participants chose whether or not to participate, and they could stop at any time during data collection. Identifying information from the participants was collected on a voluntary basis, and was protected according to the University of Arizona’s policies and Federal regulations regarding responsible conduct of research. The author claims no conflicts of interest and the IRB determined that this doctor of nursing practice project was of minimal risk to participants.

Setting

The setting for this doctor of nursing practice project was an online survey conducted in the State of Arizona. Using online surveys to collect data from health care providers has many advantages and disadvantages. Online data collection generally has a lower cost and more flexible design than other modes of delivery (Braithwaite, Emery, Lusignana, & Sutton, 2003; Dykema, Jones, Piche & Stevenson, 2013). A literature review by Dykema, et al. (2013) found online surveys to have a higher percentage of answered questions, increased flexibility, and shorter survey dispersal and data processing times when compared with mailed or in-person administered surveys. Although there are many advantages to using a virtual environment for data collection, some disadvantages do exist. By the nature of the setting, a bias in provider respondents may emerge as the virtual environment requires the clinician to have access to
internet and adequate computer literacy (Dykema, et al.). As the use of electronic health records increases throughout all practice settings, this demographic bias may be small and possibly negligible in future research.

**Planning the Study**

**Design**

This doctor of nursing practice project used a descriptive cross-sectional design. This is appropriate for the research aims as the data collected reflect results at a single point in time, in an effort to describe the current state of skin cancer prevention counseling for adolescents by nurse practitioners (Polit & Beck, 2012). The data collected were used to summarize characteristics, circumstances, and frequency of skin cancer primary prevention in outpatient care.

**Sample**

To be eligible for the survey, nurse practitioners had to meet the following criteria: currently be practicing in the state of Arizona in an outpatient setting; working a minimum average of 200 hours per year or 17 hours per month (average minimum requirement to maintain board certification through American Academy of Nurse Practitioners or American Nurses Credentialing Center); and must have reported caring for adolescents at any frequency greater than zero. Nurse practitioners who practiced exclusively within the inpatient setting were excluded.

This doctor of nursing practice project aimed for a minimum of 100 and maximum of 500 survey participants as the sample size. This sample size is comparable to similarly designed studies of skin cancer prevention and screening (Blake & Malone, 2014; Christos, et al., 2004;
Geller, et al., 2003). The adolescent population was defined as 12-19 years of age as reflected by the average age of adolescence as described by various professional organizations, including the AAFP (2014), AAP (2011), CDC (2011), NIH (2014), and WHO (2014a).

To reach these providers, the survey was disseminated via listservs of Arizona nurse practitioners from the following organizations: University of Arizona, Arizona State University, Northern Arizona University, Coalition of Arizona Registered Nurses in Advanced Practice, Northern Arizona Nurse Practitioner Group, and Arizona Nurse Practitioner Council. The survey, along with a descriptive letter of intent (see Appendix B), was distributed to all members of the above listservs.

**Survey**

An online survey was developed by this investigator using Qualtrics software accessed through the University of Arizona. Using Qualtrics software ensured that the survey was easy to navigate for the user and the data were organized in an appropriate manner. Qualtrics is a unique software program that offers various options for item formatting, including multiple choice, Likert-type scale, free text, order ranking, matrix tables, and slider scales. It allows for unique question development formats as well as offering pre-set templates. The software provides for collaboration with others allowing data or survey questions to be shared (e.g., project chair), with various levels of access. The online environment, with the assistance of Qualtrics software, enables editing of an active survey, anonymous survey links, survey start times, survey completion percentage, and response rates. In addition, Qualtrics assists with data organization, presentation, and analysis, with the options to create, edit, and export data and reports.
The survey included questions aimed at the knowledge, attitudes, and behaviors of nurse practitioners, as well as collected demographic and identifying provider information. The survey and its questions were approved by the University of Arizona IRB prior to distribution. The survey was voluntary and included a consent disclaimer to participate. Because participants had limited time to commit to the survey, the questions were succinct and the overall survey was designed to take less than 15 minutes to complete.

**Methods of Evaluation**

A total of 59 survey items addressed nurse practitioner knowledge, attitudes, and behaviors regarding skin cancer prevention in adolescents. All survey items are listed in Appendix C. Provider demographic information was also collected to provide information about the sample and to establish the frequency which the provider interacts with the adolescent population.

Nurse practitioner knowledge was assessed using nine multiple choice items. These items focused on skin cancer characteristics and current practice guidelines for skin cancer prevention counseling for the adolescent age group. Knowledge items were derived from prior skin cancer prevention research surveys directed toward patients, developed by Loescher, Hansen, Hepworth, Quale, and Sligh (2013) and Geller, et al. (2003). These items focused on knowledge of skin cancer, skin cancer risk, and preventive behaviors. Additional knowledge items developed by the investigator were based on current practice guidelines and professional organization recommendations, including USPSTF (2012) and AAP (2011). Knowledge scores were based on percentages of correct responses.
Nurse practitioner attitudes toward skin cancer were assessed using eight Likert-type scale items ranging from (1) never or not at all to (7) all the time or completely, adapted from surveys previously developed by Loescher, et al. (2013) (Cronbach’s alpha = 0.65). These items focused on personal attitudes about skin cancer. A mean total score was calculated for the attitudes scale. Skin cancer-related practice attitudes of nurse practitioners were measured using 10 items with Likert-type response options ranging from (1) strongly disagree to (7) strongly agree. These items were adapted from a survey developed by Mikkilineni, Weinstock, Goldstein, Dube, and Rossi (2001) that examined practitioner attitudes toward skin examination, skin cancer counseling, and practice behaviors.

Nurse practitioners’ practice behaviors were measured using 16 items with Likert-type response options ranging from (1) never to (7) always. These items were developed from the practice behavior questions used by Mikkilineni, et al. (2001) and Mallett, et al. (2011) and modified for use with nurse practitioners. The items focused on skin cancer prevention counseling, assessment of and counseling for adolescents’ skin cancer prevention practices, and adherence to clinical guidelines. Additional practice behavior items were derived from current practice guidelines and professional organization recommendations including USPSTF (2012) and AAP (2011).

Participant’s demographic data were also collected using 14 items. These items were developed using questions previously developed and used in the 2012 National Sample Survey of Nurse Practitioners (HRSA, 2014), in addition to items based on NIH reporting criteria previously used by Loescher, et al. (2013). The demographic information collected described the age, education level, workplace, and practice characteristics of study participants.
In an effort to capture the most data and decrease the likelihood of missing data, participants were required to respond to each question before moving on to the next. If the participant stopped the survey and missing data were present, the data collected were discarded and not used in analysis. This did not include the optional contact identification form.

Analysis

Descriptive statistics including frequencies, percentages, means, and standard deviations were used to analyze each of the study questions. Also, an item analysis, with means and standard deviations, were reported for each item on the survey as well as a total mean for the entire instrument. Internal consistency of the attitudes and behaviors subscales were assessed using Cronbach’s alpha.
CHAPTER III: RESULTS

Outcomes

Data Collection

Survey distribution and data collection occurred between November 1, 2014 and November 23, 2014. The link to the survey, along with a descriptive letter of intent, was initially distributed to all listserv members of the Coalition of Arizona Registered Nurses in Advanced Practice, Southern Arizona Advanced Practice Nursing, Northern Arizona Nurse Practitioner Group, faculty and doctor of nursing practice students at the University of Arizona, Arizona State University, and Northern Arizona University. Other initial attempts at distribution that were denied included Grand Canyon University, Arizona State Board of Nursing, and American Academy of Nurse Practitioners. Despite wide distribution, initial participation numbers at Week 1 of data collection were low at two respondents. To recruit additional participants, a reminder email was distributed to the above listservs. The principal investigator used professional networking to reach more providers. In addition, the principal investigator contacted local medical groups including Banner Network, University of Arizona Health Network, Carondelet Medical Group, and Northwest Medical Center to reach additional participants without success. At the completion of data collection, a total of 52 providers responded to the online survey. These participants voluntarily completed the anonymous survey with no offer of compensation. Identifying information was not collected unless the participant agreed to and completed a contact form for future research. This information was not linked to responses.
Sample

A total of 52 providers started the survey. Of those, 39 were eligible to complete the survey (see Figure 1). All eligible participants completed the survey without any missing responses. The sample consisted of 37 (95%) females and 2 (5%) males (see Table 5). The majority, 85%, described themselves as white. Thirty two (82%) participants held a Masters Degree. The mean age of participants was 47.6 ±11.1 years, ranging from 28 years to 72 years of age. Twenty eight (72%) of the participants described their specialty as Family Practice and 24 (62%) reported practicing in a Family Practice Setting. Nineteen (49%) had five or less years in practice as a nurse practitioner with a mean of 131.9 ±58.7 current working hours per month. Twenty nine (75%) participants spent less than 40% of their working hours on wellness visits, and 21 (54%) participants spent an average of 10%-40% of their working hours on sick visits. Additionally, 33 (85%) participants reported adolescent patient visits making up less than 40% of their total hours in practice.
FIGURE 1. *Number of Nurse Practitioners Meeting Inclusion Criteria*
TABLE 5. *Sociodemographic and Practice Characteristics of Participants* (n=39)

<table>
<thead>
<tr>
<th>Sociodemographic Characteristics</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>Mean (SD)</td>
<td>47.6 (11.1) years</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>28-72 years</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>Frequency</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>2</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bachelors</td>
<td>Frequency</td>
</tr>
<tr>
<td></td>
<td>Masters</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>DNP</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>PhD</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>DNP and PhD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Hispanic or Latino</td>
<td>Frequency</td>
</tr>
<tr>
<td></td>
<td>Hispanic or Latino</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>Frequency</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>American Indian/Alaskan Native</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Native Hawaiian/ Other Pacific Islander</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Black or African American</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>More than one race</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice Characteristics</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Certification Specialty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family</td>
<td>Frequency</td>
</tr>
<tr>
<td></td>
<td>Pediatrics</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Women’s Health</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Acute Care</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Adult-Gerontology</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Psych Mental Health</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Neonatal</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2</td>
</tr>
<tr>
<td>Work Setting*</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td>Family Practice</td>
<td>24</td>
<td>62%</td>
</tr>
<tr>
<td>Acute care/Urgent care</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>Community Health</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>Public Health</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>Academic faculty/Adjunct faculty</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Complementary</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Dermatology</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Oncology</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>University/College Student Health</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>14%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years Practicing as a Nurse Practitioner</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>8</td>
<td>21%</td>
</tr>
<tr>
<td>1-5 years</td>
<td>11</td>
<td>28%</td>
</tr>
<tr>
<td>6-10 years</td>
<td>5</td>
<td>13%</td>
</tr>
<tr>
<td>11-15 years</td>
<td>5</td>
<td>13%</td>
</tr>
<tr>
<td>16-20 years</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>&gt; 20 years</td>
<td>6</td>
<td>15%</td>
</tr>
</tbody>
</table>

*Participants able to choose more than one certification specialty and work setting. No participants listed the work settings of, Allergy/Immunology, Emergency, Endocrinology, Gastroenterology, Infectious Disease, Nephrology, Neurology, Occupational Health, Orthopedics/Sports Medicine, Pain Management, Palliative, Pulmonology/Respiratory, Retail Health, Rheumatology, School Based Clinic (K-HS), Surgical, or Wound Care.
<table>
<thead>
<tr>
<th>Range</th>
<th>20-350 hours/month</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Hours per Month in Practice</td>
<td>131.9 (58.7) hours/ month</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of Working Hours Spent Caring for Adolescents</td>
<td>9 23%</td>
<td>11 28%</td>
<td>8 21%</td>
</tr>
<tr>
<td>10-20%</td>
<td>11 28%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-30%</td>
<td>8 21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-40%</td>
<td>5 13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-50%</td>
<td>2 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-60%</td>
<td>0 0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61-70%</td>
<td>2 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71-80%</td>
<td>1 3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81-90%</td>
<td>0 0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91-100%</td>
<td>1 3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of Patient Visits Related to Health Promotion, Wellness, etc.</td>
<td>8 21%</td>
<td>6 15%</td>
<td>7 18%</td>
</tr>
<tr>
<td>10-20%</td>
<td>6 15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-30%</td>
<td>7 18%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-40%</td>
<td>8 21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-50%</td>
<td>3 8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-60%</td>
<td>2 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61-70%</td>
<td>2 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71-80%</td>
<td>2 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81-90%</td>
<td>1 3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91-100%</td>
<td>0 0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of Patient Visits Related to Episodic Occurrences</td>
<td>3 8%</td>
<td>5 13%</td>
<td>9 23%</td>
</tr>
</tbody>
</table>
Participants’ Overall Skin Cancer Knowledge

The overall mean score correct of participants’ knowledge of skin cancer and skin cancer prevention was 78% (see Table 6). Thirty seven (95%) participants were able to correctly identify the main cause of skin cancer. However, only 21 (54%) participants correctly identified the current trend in the incidence of skin cancer in the adolescent population.

TABLE 6. Participants’ Knowledge of Skin Cancer and Skin Cancer Primary Prevention (n=39)

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency</th>
<th>Mean Score Correct (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Cause of Skin Cancer</td>
<td>37</td>
<td>95%</td>
</tr>
<tr>
<td>Most Protective Clothing</td>
<td>33</td>
<td>85%</td>
</tr>
<tr>
<td>Most Protective Hat</td>
<td>31</td>
<td>79%</td>
</tr>
<tr>
<td>Sunscreen Application Timing</td>
<td>30</td>
<td>77%</td>
</tr>
<tr>
<td>Incidence of Skin Cancer in Adolescent Population</td>
<td>21</td>
<td>54%</td>
</tr>
</tbody>
</table>

Overall Mean Score Correct 78%

The overall mean score correct of participants’ knowledge of skin cancer clinical guidelines for counseling adolescents was 39.8% (see Table 7). All participants correctly identified the AAD clinical guideline, but only one (3%) was able to identify the USPSTF clinical guideline.

TABLE 7. Participants’ Knowledge of Skin Cancer Clinical Guidelines for Counseling Adolescents (n=39)

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Frequency</th>
<th>Mean Score Correct %</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Academy of Dermatology</td>
<td>39</td>
<td>100%</td>
</tr>
<tr>
<td>American Academy of Pediatrics</td>
<td>20</td>
<td>51%</td>
</tr>
<tr>
<td>American Academy of Family Physicians</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>US Preventive Services Task Force</td>
<td>1</td>
<td>3%</td>
</tr>
</tbody>
</table>

Overall Mean Score Correct 39.8%
Participants’ Attitudes Toward Skin Cancer and Skin Cancer Risk

In general, the participants had a positive attitude regarding skin cancer. They felt strongly about skin cancer being serious and agreed that using sunscreen as recommended could reduce chances of skin cancer (see Table 8). The participants agreed that melanoma is potentially a fatal illness, but they were more neutral about adolescents being at risk for developing melanoma and NMSC.

TABLE 8. Participants’ Attitudes about Skin Cancer and Skin Cancer Risk (n= 39)

<table>
<thead>
<tr>
<th>Item</th>
<th>Likert Scale 1(never) – 7 (all of the time)</th>
<th>Mean Score (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melanoma is potentially a fatal illness</td>
<td></td>
<td>6.49 (0.82)</td>
</tr>
<tr>
<td>Using sunscreen as recommended reduces the chances of getting skin cancer</td>
<td></td>
<td>6.26 (0.75)</td>
</tr>
<tr>
<td>Skin cancer is serious</td>
<td></td>
<td>6.26 (0.99)</td>
</tr>
<tr>
<td>Wearing clothing that protects from skin from the sun reduces the chances of getting skin cancer</td>
<td></td>
<td>6.18 (0.82)</td>
</tr>
<tr>
<td>Adolescents, in general, are at risk for developing melanoma</td>
<td></td>
<td>5.41 (1.46)</td>
</tr>
<tr>
<td>Spending little time in the sun reduces the chances of getting skin cancer</td>
<td></td>
<td>5.23 (1.80)</td>
</tr>
<tr>
<td>Nonmelanoma skin cancer is potentially a fatal illness</td>
<td></td>
<td>4.92 (1.40)</td>
</tr>
<tr>
<td>Adolescents, in general, are at risk for developing nonmelanoma skin cancer</td>
<td></td>
<td>4.79 (1.45)</td>
</tr>
</tbody>
</table>

Cronbach’s Alpha (α) = 0.733

The internal consistency of this subscale was measured using Cronbach’s alpha (α). For the entire subscale, the internal consistency was good with α = 0.733. If the question, ‘spending
little time in the sun reduces the chances of getting skin cancer’ was eliminated, the internal consistency would be increased to $\alpha = 0.767$.

**Participants’ Attitudes about Skin Cancer Counseling for Adolescents**

In general, the participants had a positive attitude toward skin cancer prevention counseling for adolescents. The participants felt strongly that preventive counseling was within their scope of practice and that the advice from a nurse practitioner could help adolescents decrease their skin cancer risk (see Table 9). However, participants did not feel as strongly about skin cancer prevention counseling being a priority in their practice.

The internal consistency of this subscale was measured using Cronbach’s alpha ($\alpha$). For the entire subscale, the internal consistency was average with $\alpha = 0.719$. If the question, ‘an adolescent’s phenotypic factors affect my decision to provide skin cancer prevention counseling’ was eliminated, the internal consistency would increase to $\alpha = 0.736$. 
TABLE 9. *Participants’ Attitudes about Skin Cancer Counseling for Adolescents* (n=39)

<table>
<thead>
<tr>
<th>Item</th>
<th>Likert Scale 1(strongly disagree) – 7 (strongly agree)</th>
<th>Mean Score (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counseling adolescents about skin cancer prevention is within my scope of practice</td>
<td></td>
<td>6.62 (0.85)</td>
</tr>
<tr>
<td>Advice from nurse practitioners can help adolescent patients decrease their skin cancer risk.</td>
<td></td>
<td>6.00 (1.12)</td>
</tr>
<tr>
<td>I feel obligated to counsel my adolescent patients about skin cancer prevention.</td>
<td></td>
<td>5.69 (1.20)</td>
</tr>
<tr>
<td>Counseling adolescents about skin cancer prevention is a good use of my time.</td>
<td></td>
<td>5.67 (1.13)</td>
</tr>
<tr>
<td>Skin cancer prevention for adolescents is something that concerns me.</td>
<td></td>
<td>5.26 (1.14)</td>
</tr>
<tr>
<td>Counseling from a nurse practitioner will influence an adolescent’s skin cancer risk-reducing behaviors.</td>
<td></td>
<td>5.15 (1.18)</td>
</tr>
<tr>
<td>An adolescent’s genetic factors affect my decision to provide skin cancer prevention counseling.</td>
<td></td>
<td>4.79 (1.92)</td>
</tr>
<tr>
<td>Counseling adolescents about skin cancer prevention takes too much time.</td>
<td></td>
<td>4.72 (1.59)</td>
</tr>
<tr>
<td>Skin cancer prevention counseling is a priority in my practice</td>
<td></td>
<td>4.62 (1.63)</td>
</tr>
<tr>
<td>An adolescent patient’s phenotypic factors affect my decision to provide skin cancer prevention counseling.</td>
<td></td>
<td>4.15 (1.90)</td>
</tr>
</tbody>
</table>

Cronbach’s Alpha (α) = 0.719
Participants’ Skin Cancer Prevention Recommendations to Adolescent Patients

**General Population.** For adolescent patients in the general population (i.e. not at increased risk for skin cancer), participants were overall neutral regarding the skin cancer prevention recommendations they use in practice (see Table 10). Although there was a large variability in responses, the most common prevention recommendation nurse practitioners stated that they used for the general population was sunscreen use.

The internal consistency of this subscale was measured using Cronbach’s alpha (α). For the entire subscale, the internal consistency was very high, $\alpha = 0.928$. No improvement of the subscale could be made by removing any of the items.

**TABLE 10. Participants’ Skin Cancer Prevention Recommendations to Adolescent Patients in the General Population (n=39)**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Likert Scale 1 (never) to 7 (always)</th>
<th>Mean Score ($\pm$SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use SPF 15 or higher sunscreen</td>
<td>4.67 (1.95)</td>
<td></td>
</tr>
<tr>
<td>Wear sun protective clothing (hats, long sleeves, etc.)</td>
<td>4.46 (1.80)</td>
<td></td>
</tr>
<tr>
<td>Seek shade when outdoors during the day</td>
<td>4.26 (1.90)</td>
<td></td>
</tr>
<tr>
<td>Avoid sun exposure during the peak hours of 10 am to 4 pm</td>
<td>4.08 (2.00)</td>
<td></td>
</tr>
</tbody>
</table>

Cronbach’s Alpha $\alpha = 0.928$

**At Risk Population.** In general, for adolescent patients at increased risk for skin cancer (e.g. genetic factors, phenotypic factors), participants reported providing skin cancer prevention recommendations more often than to those adolescent patients in the general population (see Table 11). However, the participants remained fairly neutral regarding their practice behaviors with a large variability in responses. The most commonly chosen skin cancer prevention
recommendation for the higher risk population was the use of sunscreen, similar to the general population.

The internal consistency of this subscale was measured using Cronbach’s alpha (α). For the entire subscale, the internal consistency was high, α = 0.968. Only modest improvement to α = 0.971 could be achieved by removing the item ‘use SPF 15 or higher sunscreen’.

**TABLE 11. Participants’ Skin Cancer Prevention Recommendations to Adolescent Patients at Increased Risk of Skin Cancer n=39**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Mean Score (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use SPF 15 or higher sunscreen</td>
<td>4.97 (1.91)</td>
</tr>
<tr>
<td>Wear sun protective clothing (hats, long sleeves, etc.)</td>
<td>4.56 (2.02)</td>
</tr>
<tr>
<td>Seek shade when outdoors during the day</td>
<td>4.54 (2.02)</td>
</tr>
<tr>
<td>Avoid sun exposure during the peak hours of 10 am to 4 pm</td>
<td>4.49 (2.08)</td>
</tr>
</tbody>
</table>

Cronbach’s Alpha α = 0.968

**Participants’ Self-Reported Behaviors**

In general, the participants reported infrequent performance of skin cancer prevention behaviors for their adolescent patients. Despite wide variability, the sample chose ‘advise and counsel adolescents about skin cancer primary prevention’ as their most commonly practiced behavior (see Table 12). The least commonly practiced behavior was providing adolescents with skin cancer primary prevention resource materials.

The internal consistency of this subscale was measured using Cronbach’s alpha (α). For the entire subscale, the internal consistency was high, α = 0.970. No improvement of the subscale could be made by removing any of the items.
Table 12. *Participants’ Self-Reported Behaviors Pertaining to Adolescent Patients* (n=39)

<table>
<thead>
<tr>
<th>Practice Behavior</th>
<th>Mean Score (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advise and counsel adolescents about skin cancer primary prevention</td>
<td>3.97 (1.94)</td>
</tr>
<tr>
<td>Assess the patient’s sunscreen use</td>
<td>3.72 (2.05)</td>
</tr>
<tr>
<td>Assess the patient’s barriers to sunscreen use</td>
<td>3.23 (2.19)</td>
</tr>
<tr>
<td>Assess the patient’s use of other methods of sun protection (e.g., sun protective clothing, sun avoidance)</td>
<td>3.21 (2.05)</td>
</tr>
<tr>
<td>Assess the patient’s ultraviolet radiation exposure</td>
<td>3.10 (2.04)</td>
</tr>
<tr>
<td>Follow an established practice guideline for skin cancer primary prevention counseling</td>
<td>2.87 (1.96)</td>
</tr>
<tr>
<td>Provide skin cancer primary prevention resource materials</td>
<td>2.64 (2.08)</td>
</tr>
</tbody>
</table>

Cronbach’s Alpha α = 0.970

**Congruency with Existing Practice Guidelines**

Overall, the surveyed nurse practitioners’ recommendations were not congruent with existing practice guidelines. Twelve (32%) participants stated that they did not use an established guideline (see Table 13). Although ten participants (26%) chose the AAD as their choice of established practice guideline, this is not reflected in their practice behaviors, as depicted in Table 12.
TABLE 13. *Choice of Established Skin Cancer Prevention Counseling Recommendation or Practice Guideline Used in Practice* (n=39)

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Academy of Dermatology</td>
<td>10</td>
<td>26%</td>
</tr>
<tr>
<td>U.S. Preventative Services Task Force</td>
<td>9</td>
<td>23%</td>
</tr>
<tr>
<td>American Academy of Pediatrics</td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td>National Cancer Institute</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Other:</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>None</td>
<td>12</td>
<td>31%</td>
</tr>
</tbody>
</table>

Note: ‘Other’ was specified as ‘common sense’.
CHAPTER IV: DISCUSSION

Summary

The survey participant goal of 100 was not met and the final sample size of 39 is small. Participant recruitment was the most notable difficulty in the project. The survey link was distributed to several Arizona based listservs. This may have affected the response rate, because the principal investigator did not have control over who received, viewed, and opened the link. The initial and reminder distributions were reliant on listserv webmasters. Additionally, the project took place during a time of high volume survey distribution. As a result of this small sample size, the findings of this doctor of nursing practice project may not be generalizable to all nurse practitioners in Arizona who care for adolescent patients.

Despite the small sample size, this doctor of nursing practice project has several successes and strengths. The survey was effectively created and delivered online. No known issues emerged regarding the survey software, distribution, or data collection. In addition, all participants that started the survey completed it in its entirety, lending to no attrition. The main and exploratory aims of this doctor of nursing practice project were met. This is a significant strength because the current literature contains no study investigating nurse practitioner primary prevention counseling for the adolescent population.

The information gathered from this doctor of nursing practice project draws attention to a pressing health care issue and brings foundational data to research and practice. The data gained from this survey included nurse practitioner behaviors, attitudes, and recommendations regarding skin cancer prevention for adolescents. Limited data have been collected and shared in a scholarly manner regarding skin cancer primary prevention. Less is known regarding primary
prevention of skin cancer in the adolescent population. These data, surveys, and subscales provide a foundation for future research regarding skin cancer prevention in the adolescent population by nurse practitioners.

**Discussion of Findings Relative to Other Evidence**

**Sample**

The demographics of the sample used were comparable to similar studies and known nurse practitioner population demographics. The sample size was relatively small in comparison with other similar studies that had samples ranging from 64 to 111(Blake & Malone, 2014; Furfaro, Bernaix, Schmidt, & Clement, 2008; Maguire-Eisen & Frost, 1994; Shelby, 2014). In addition, the sample used for this project had, in general, fewer years in practice as a nurse practitioner in comparison with other studies. The nurse practitioner sample used in Shelby (2014) had a mean of 11 years in practice and 75% of the sample used by Maguire-Eisen and Frost (1994) had been in practice 10 years or more. However, other sample demographics (age, gender, education level, race, and certification specialty) were similar to other nurse practitioner studies regarding skin cancer, as well as national and state level data on nurse practitioners. In general, other data collections have described the nurse practitioner population as mostly Caucasian females with a Masters degree, specialized in Family Practice, with a mean age of 46.5 years (AZBN, 2014; Blake & Malone, 2014; Furfaro, et al., 2008; HRSA, 2014; Maguire-Eisen & Frost, 1994; Shelby, 2014; Wilson, et al., 2011). In conclusion, despite the small sample size of this study, the sample is demographically representative of the Arizona nurse practitioner population.
Skin Cancer Knowledge

Findings regarding nurse practitioner skin cancer knowledge in this doctor of nursing practice project were similar to comparable studies. The overall knowledge of the survey sample was moderate to low with an overall mean score correct of 78%. This is comparable to the 69% overall knowledge score found by Maguire-Eisen and Frost (1994) regarding nurse practitioner knowledge of risks, prevention, and recognition of malignant melanoma. In addition, Furfaro, et al. (2008) used the same scale as Maguire-Eisen and Frost (1994) and found an overall average knowledge score of 80% for nurse practitioners’ knowledge regarding malignant melanoma. Similar nurse practitioner knowledge findings are presented in Blake & Malone (2014) and Shelby (2014), finding that nurse practitioners’ overall skin cancer knowledge was basic to minimal. These comparisons must be made with the understanding that none of these prior studies specifically addressed nurse practitioner knowledge about skin cancer prevention in adolescents. In addition, the lowest scoring knowledge item in the current study was related to incidence of skin cancer among adolescents. Therefore, although these similar studies may be reflective of overall nurse practitioner knowledge, they may not be accurate concerning the adolescent population.

Attitudes and Behaviors

As a result of limited prior research regarding nurse practitioners’ practice attitudes and behaviors related to skin cancer prevention, few comparisons and generalizations can be made about the current findings. Further limiting this comparison is the focus on the adolescent population, which is not only vague in its description, but also infrequently studied. Despite
these barriers, there are some similar items in prior studies, largely concerned with skin cancer screening by nurse practitioners, which can be discussed in relation to the current findings.

Several studies, including the findings from this survey, support nurse practitioners overall positive attitude toward skin cancer prevention, belief that skin cancer prevention is within their scope of practice, and agree that nurse practitioner interventions can be effective in the prevention of skin cancer (Blake & Malone, 2014; Maguire-Eisen & Frost, 1994; Shelby, 2014). In addition, the majority of nurse practitioners in this study and others were neutral to positive that skin cancer prevention was a priority for their practice (Blake & Malone, 2014). Despite these positive attitudes, findings from the current study support other studies showing the majority of nurse practitioners never or only sometimes provide preventive counseling or skin cancer prevention education to their patients (Blake & Malone, 2014; Shelby, 2014). When nurse practitioners did counsel or educate their patients, they were most likely to discuss sunscreen use and least likely to provide the patient with resources or material regarding the prevention of skin cancer (Blake & Malone, 2014; Maguire-Eisen & Frost, 1994).

**Preventive Recommendations in Practice and Clinical Guidelines**

Despite insufficient evidence to support routine counseling for primary prevention of skin cancer in adolescents, several organizations have developed practice recommendations for practitioners to follow (see Table 4). These recommendations are inconsistent with each other, but do have areas of overlap. This doctor of nursing practice project assessed nurse practitioner knowledge of these recommendations and if any were used in practice. In the current findings, 100% of participants were able to correctly identify the AAD recommendation for skin cancer counseling and 51% of participants were able to correctly identify the AAP guideline. However,
only one participant was able to correctly identify the USPSTF clinical guideline and only 5% correctly identified the AAFP guideline. 100% may have correctly chosen the AAD recommendation because the correct answer was the most encompassing option. Other reasons for the discrepancy in knowledge among the different guidelines are unknown and unable to be compared with other studies, as this is the only known study to investigate congruency of nurse practitioners knowledge and use of skin cancer counseling guidelines.

Despite the variability in knowledge of practice guidelines, nurse practitioners reported practice behaviors that were incongruent with the guidelines. Of the participants that reported using a clinical practice guideline, ten stated they followed the AAD practice guideline, which recommends counseling all populations about ‘avoidance of UVR’ and ‘consistent sun protection practices’. This is not reflected in the mean scores of the self-reported practice behaviors. In addition, nurse practitioners were least likely to recommend avoidance of sun exposure during peak hours, regardless of the adolescent’s risk. Further supporting incongruent practice behaviors with recommendations is the small increase in mean scores and increased variability of self-reported practice behaviors when comparing practice behaviors for an adolescent in the general population versus an adolescent at increased risk for skin cancer. In comparison, AAFP (2012) and USPSTF (2012) recommend that adolescents with fair skin, or those at increased risk for skin cancer, should be counseled regarding skin cancer prevention.

Because of the limited data on nurse practitioners use of skin cancer prevention guidelines, especially among adolescents, a comparison with a broader body of literature is necessary. Studies have shown that nurse practitioners have a positive attitude toward clinical practice guidelines, and believe that their use can improve care (Harrison, Dowswell, & Wright,
In a study investigating actual screening rates in primary care settings by various health care professionals, Martires, Kurlander, Minwell, Dahmns, and Bordeaux (2014) found that most screenings completed in primary care were consistent with current practice recommendations. However, the skin cancer screening rate was significantly lower than other recommendations with a similar lack of evidence of mortality benefit (Martires, et al., 2014). Time constraints, inadequate insurance reimbursement, patient refusal to comply, lack of provider education, and lack of experience in counseling have been identified as reasons for not adhering to preventive clinic practice guidelines (Melnyk, et al.; Yarnall, Pollak, Ostbye, Krause, & Michener, 2003). The participants in this sample felt neutral regarding skin cancer counseling being a priority. Because of this, they may be focusing their time on other preventive counseling and screening recommendations that have shown to be of stronger benefit in clinical trials. These findings are reflective of the inconsistencies noted between practice guidelines and practice behaviors in this doctor of nursing practice project.

**Limitations**

The sample size for this doctor of nursing practice project was lower than expected. Despite wide distribution of the survey to various professional listservs and professional networking, a minimum sample size of 100 was not obtained. Although the demographics of the sample were comparable to other demographic findings of nurse practitioners, the small number of participants affects the generalizability of findings. In addition, geographic diversity within Arizona could not be determined because of the anonymous nature of the survey.

Further affecting the generalizability of findings is the method in which the survey was delivered. Online survey creation and distribution, despite benefits, can result in participant bias.
with those participating being more internet or computer savvy than other members of the
population (Dykema, et al., 2013). Future research with direct e-mailing, in person recruitment
at conferences, or inclusion of nurse practitioners beyond Arizona may provide information more
generalizable to the nurse practitioner population.

The content studied in this doctor of nursing practice project also lends itself to
limitations. Nurse practitioner knowledge, attitudes, and behaviors regarding skin cancer
prevention are largely understudied. Additionally, current research in this area is inconsistent;
each using different variables, measurement scales, inclusion, and exclusion criteria.
Comparable data become significantly less when specifically addressing the adolescent
population, which itself is inconsistently defined. Most research on nurse practitioners’
knowledge, attitudes, and behaviors has been measured using self-reported Likert type scales,
which often limit themselves to cross-sectional, and possibly skewed, data collection. Future
research should use previously developed measurement scales, such as the ones used in this
study. In addition, future research should aim for a larger sample size with increased
demographic and geographic variability, and collect data from various settings beyond the online
environment over a longer period of time.

**Interpretation**

This doctor of nursing practice project investigated the largely unstudied topic of nurse
practitioners’ knowledge, attitudes, and behaviors regarding skin cancer prevention for
adolescents. Findings from the project support those in prior studies: nurse practitioners have a
moderate amount of knowledge regarding skin cancer prevention, a positive attitude toward skin
cancer prevention, believe it is part of their role, but are not recommending preventive behaviors
in practice. In addition, this research explored the congruency of nurse practitioner practice behaviors in relation to clinical practice guidelines.

The current study found the nurse practitioner sample to be deficient in skin cancer knowledge regarding adolescents. The adolescent specific item was the lowest scoring knowledge item in the current study with only 21 participants answering correctly. Several reasons for this discrepancy could be theorized. As investigated in this study, the majority of practitioners stated that only 40% or less of their patient visits were with adolescents. Adolescence is often thought of a generally healthy period of life without chronic illness and health care visits are often limited to an as needed basis (WHO, 2014a). This may limit interactions nurse practitioners have with this population and may impact their overall knowledge and experience with this age group. In addition, skin cancer has not been traditionally thought of as a disease affecting the adolescent population. The diagnosis is most commonly made among the elderly, as cumulative UVR exposure and overall cancer risk increases (ACS, 2014; Gordon, 2013). However, primary prevention should occur early as exposure to UVR during youth is linked with future skin cancers and adolescence offers a unique period of growth, during which time behavioral patterns and lifestyle choices are established (CDC, 2011; Maguire-Eisen, 2013; Wehner et al., 2014).

This doctor of nursing practice project found that the participants had a positive attitude toward skin cancer prevention but did not incorporate primary preventive behaviors in their current practice. The participants most often reported discussing and recommending sunscreen use for skin cancer prevention among adolescent patients regardless of their skin cancer risk. Sunscreen use, for the prevention of skin cancer, has been recommended repeatedly by several
organizations with almost identical recommendations for use across the lifespan (AAD, 2014; AAFP, 2014; AAP, 2011; ACS, 2013; CDC, 2014; NCI, 2014d; WHO, 2014b). This consistency and widespread recommendation in sunscreen use may explain why nurse practitioners were more likely to choose this preventive measure over others such as seeking shade, avoiding midday sun, and wearing UVR protective clothing.

Despite the participants’ recommendations for sunscreen use, the participants did not show a significant increase in preventive recommendations for adolescents at an increased risk of skin cancer. Furthermore, the participants did not report assessing for genetic or phenotypic risk factors for skin cancer in their adolescent patients. It is unclear from this study why the participants did not significantly increase preventive recommendations for at risk adolescents. This may be an educational barrier that requires more investigation.

**Implications for Clinical Practice**

Skin cancer is largely preventable, but the incidence continues to rise. As a result, nurse practitioners in primary care need to address preventive counseling. The results from this doctor of nursing practice project have shown that despite positive attitudes towards skin cancer prevention, there is a lack of knowledge regarding skin cancer, skin cancer risk, prevention guidelines, and preventive recommendations for the adolescent population. Therefore, future research and interventions should aim to educate nurse practitioners about this pressing health issue, as well as their role in prevention. Once appropriate education is provided, nurse practitioners will be more likely to adhere to clinical practice guidelines and effectively counsel adolescents on preventive measures against skin cancer.
Conclusions

This doctor of nursing practice project identified potential deficiencies in nurse practitioners’ knowledge, attitudes, and practices of skin cancer prevention for adolescents, as they relate to current clinical practice guidelines. The information gathered will provide a foundation for future research, intervention development, and education regarding skin cancer prevention for adolescents, with an aim to improve nurse practitioner clinical practice.
APPENDIX A

IRB APPROVAL
Date: October 30, 2014
Principal Investigator: Maxine Ann Lucas
Protocol Number: 1410544334
Protocol Title: Nurse Practitioners Skin Cancer Prevention Counseling to Adolescents
Level of Review: Exempt
Determination: Approved
Documents Reviewed
Concurrently:
- Data Collection Tools: Lucas Nurse Practitioner Survey.docx
- HSPP Forms/Correspondence: Lucas F107.doc
- HSPP Forms/Correspondence: Lucas F200.doc
- HSPP Forms/Correspondence: Signature page.pdf
- Informed Consent/PHI Forms: Lucas Disclaimer Nurse Practitioners.pdf
- Other: Lucas Request for Permission to Use listserv.docx
- Recruitment Material: Lucas Recruitment email to be placed on NP listserv.docx

This submission meets the criteria for exemption under 45 CFR 46.101(b).

- The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).
- All research procedures should be conducted in full accordance with all applicable sections of the Investigator Manual.
- Exempt projects do not have a continuing review requirement.
- Amendments to exempt projects that change the nature of the project should be submitted to the Human Subjects Protection Program (HSPP) for a new determination. See the Investigator Manual, 'Appendix C Exemptions,' for more information on changes that affect the determination of exemption. Please contact the HSPP to consult on whether the proposed changes need further review.
- All documents referenced in this submission have been reviewed and approved. Documents are filed with the HSPP Office. If subjects will be consented the approved consent(s) are attached to the approval notification from the HSPP Office.

Your proposal is in compliance with Federalwide Assurance 00004218. This project should be conducted in full accordance with all applicable sections of the IRB Investigators Manual and you should notify the IRB immediately of any proposed changes that affect the protocol. You should report any unanticipated problems involving risks to the participants or others to the IRB.
APPENDIX B

DESCRIPTIVE LETTER OF INTENT
DESCRIPTIVE LETTER OF INTENT

Dear valued nurse practitioner,

My name is Maxine Lucas and I am a Family Nurse Practitioner and DNP student at the University of Arizona College of Nursing. My area of interest is skin cancer and skin cancer prevention, particularly among the adolescent population. For my doctor of nursing practice project, I am conducting a brief online survey of nurse practitioners practicing in an outpatient setting within Arizona to determine their knowledge, attitudes, and practice behaviors related to skin cancer primary prevention for adolescent patients. **If you are an Arizona nurse practitioner currently practicing in an outpatient setting that cares for the adolescent population, please read on!**

Skin cancer is the most common cancer worldwide and disproportionately affects the adolescent population. As the nurse practitioner workforce within Arizona continues to grow, the role of nurse practitioners in skin cancer primary prevention has become of more interest. Despite the development of clinical practice guidelines for skin cancer primary prevention in adolescents, current nurse practitioner practice knowledge, attitudes, and behaviors are unknown. Similarly, little is known about nurse practitioners’ practice behaviors relative to these clinical practice guidelines.

In collaboration with my advisor, Dr. Lois Loescher, I am conducting a brief, electronic survey of Arizona outpatient nurse practitioners working with the adolescent population regarding primary skin cancer prevention in practice. Please consider adding to the state of the knowledge of this important topic by participating in this survey. The link to the survey is at the bottom of this email. It should take no longer than 15 minutes to complete the survey. Your response will be anonymous unless you choose to be contacted regarding future research.

An Institutional Review Board responsible for human subjects research at The University of Arizona reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

By completing and submitting the survey, you are giving consent to be a participant in the study. Your participation in this study is voluntary and you are free to stop the survey at any time. There are no risks associated with this study.

Please click on the survey link below and complete the survey by November 21, 2014.

(LINK)

Thank you in advance for your interest and for your participation!

Sincerely,

Maxine Lucas, FNP-C  
DNP Student  
The University of Arizona College of Nursing
APPENDIX C

SURVEY ITEMS
SURVEY ITEMS

1) Are you currently working at least an average of 17hrs/month or 200hrs/year as a Nurse Practitioner in a clinical setting treating patients?
   Yes
   No [Thanks for your interest, but you are not eligible to proceed through the survey]

2) Do you see adolescents (12-19 years of age) in your practice?
   Yes
   No [Thanks for your interest, but you are not eligible to proceed through the survey]

3) What is your current practice setting?
   Inpatient [Thanks for your interest, but you are not eligible to proceed through the survey]
   Outpatient

Knowledge of Skin Cancer and Skin Cancer Primary Prevention

Please select the correct answer:

4) The incidence of skin cancer in the adolescent population is:
   a) Declining
   b) Staying the same
   c) Increasing*
   d) Don’t know/Unsure

5) In general, the main cause of most skin cancer is:
   a) Chemical exposure
   b) Ultraviolet radiation*
   c) Ionizing radiation
   d) Don’t know/Unsure

6) What type of clothing material is most protective while in the sun?
   a) Loosely fitting and tightly woven*
   b) Tightly fitting and tightly woven
   c) Loosely fitting and loosely woven
   d) Don’t know/Unsure
7) How long before going out in the sun should one apply sunscreen for it to be most effective?
   a) 15-30 minutes*
   b) Just before going out in the sun
   c) 5-10 minutes
   d) Don’t know/Unsure

8) Which of the following types of hats provides the best protection from the sun?
   a) Wide-brimmed straw hat
   b) Baseball cap
   c) Tightly-woven wide-brimmed cloth hat*
   d) Don’t know/Unsure

9) According to the American Academy of Dermatology clinical guidelines, the following adolescents should be counseled regarding skin cancer:
   a) Every adolescent*
   b) Only those with light skin
   c) Only those with a history of skin cancer
   d) Don’t know/Unsure

10) According to the American Academy of Family Physicians, the following adolescents should be counseled regarding skin cancer:
    a) Every adolescent
    b) Only those with light skin*
    c) Only those with a history of skin cancer
    d) Don’t know/Unsure

11) According to USPSTF guidelines, the following adolescents should be counseled regarding skin cancer:
    a) Every adolescent
    b) Only those with light skin*
    c) Only those with a history of skin cancer
    d) Don’t know/Unsure
12) According to the American Academy of Pediatrics, how often should adolescents be counseled for skin cancer prevention?
   a) Every visit
   b) Every six months
   c) Annually*
   d) Don’t know/Unsure

**Skin Cancer Attitudes**

Please mark the one response to each item that best reflects your opinion. There are no right or wrong answers.

Items are scored on Likert-type scales with response options ranging from 1 (low anchor) to 7 (high anchor)

1  2  3  4  5  6  7

In your opinion,

13) Skin cancer is serious
   1 = never, 7 = all of the time

14) Cutaneous melanoma is potentially a fatal illness
   1= never, 7= all of the time

15) Non-melanoma skin cancer is potentially a fatal illness
   1= never, 7= all of the time

16) Using sunscreen as recommended reduces the chances of getting skin cancer.
   1= not at all, 7= completely

17) Spending little time in the sun reduces the chances of getting skin cancer.
   1= not at all, 7= completely

18) Wearing clothing that protects skin from the sun reduces the chances of getting skin cancer.
   1= not at all, 7= completely

19) Adolescents, in general, are at risk for developing melanoma
   1= not at all, 7= completely
20) Adolescents, in general, are at risk for developing non-melanoma skin cancer
   1=not at all, 7=completely

   **Practice Attitudes**

   Items are scored on a 7 point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree)

   1  2  3  4  5  6  7

21) Skin cancer prevention counseling is a priority in my practice.
22) Skin cancer prevention for adolescents is something that concerns me.
23) Counseling adolescents about skin cancer prevention takes too much time.
24) Counseling adolescents about skin cancer prevention is a good use of my time.
25) Counseling adolescents about skin cancer prevention is within my scope of practice.
26) I feel obligated to counsel my adolescent patients about skin cancer prevention.
27) Advice from nurse practitioners can help adolescent patients decrease their skin cancer risk.
28) Counseling from a nurse practitioner will influence an adolescent’s skin cancer risk-reducing behaviors.
29) An adolescent patient’s phenotypic factors affect my decision to provide skin cancer prevention counseling.
30) An adolescent’s genetic factors affect my decision to provide skin cancer prevention counseling.

   **Practice Behaviors**

   Items below are scored on a 7 point Likert-type scale ranging from 1 (Never) to 7 (Always)

   1  2  3  4  5  6  7

   How often do you recommend the following behaviors to your adolescent patients in the general population (i.e., not at increased risk of skin cancer):
31) Use SPF 15 or higher sunscreen
32) Avoid sun exposure during the peak hours of 10 am to 4 pm
33) Wear sun protective clothing (hats, long sleeves, etc.)
34) Seek shade when outdoors during the day
How often do you recommend the following behaviors to your adolescent patients at an increased risk of skin cancer:

35) Use SPF 15 or higher sunscreen
36) Avoid sun exposure during the peak hours of 10 am to 4 pm
37) Wear sun protective clothing (hats, long sleeves, etc.)
38) Seek shade when outdoors during the day

How often do you do the following activities for your adolescent patient:
Items are scored on a 7 point Likert-type scale ranging from 1 (Never) to 7 (Always)

1 2 3 4 5 6 7

39) Assess the patient’s ultraviolet radiation exposure
40) Assess the patient’s sunscreen use
41) Assess the patient’s barriers to sunscreen use
42) Assess the patient’s use of other methods of sun protection (e.g., sun protective clothing, sun avoidance)
43) Provide skin cancer primary prevention resource materials
44) Advise and counsel adolescents about skin cancer primary prevention
45) Follow an established practice guideline for skin cancer primary prevention counseling

46) Choose the established skin cancer prevention counseling recommendation or practice guideline that you prefer to use in practice:

American Academy of Dermatology
American Academy of Pediatrics
National Cancer Institute
U.S. Preventative Services Task Force
Other (specify):
None
Demographics

47) Identify your main population focus (certification specialty). Mark all that apply

- Acute Care
- Adult
- Adult-Gerontology
- Family
- Neonatal
- Pediatrics
- Psych Mental Health
- Women’s Health
- Other (specify):

48) In what type of setting do you work as a nurse practitioner? Check all that apply

- Academic faculty/Adjunct faculty
- Acute care/Urgent Care
- Allergy/Immunology
- Cardiovascular
- Complementary
- Dermatology
- Emergency
- Endocrinology
- Family Practice
- Gastroenterology
- HIV/AIDS
Infectious Disease
Nephrology
Neurology
Occupational Health
Oncology
Orthopedics/Sports Medicine
Pain Management
Palliative
Pulmonology/Respiratory
Retail Health
Rheumatology
School Based Clinic (Elementary-HS)
Surgical
University/College Student Health
Wound Care
Other (specify):

49) How many years have you been a practicing nurse practitioner?

< 1 year
1-5 years
6-10 years
11-15 years
16-20 years
>20 years
50) On average, how many hours a month are you in practice?
_________ hours

51) What percentage of those hours do you spend caring for the adolescent population (12-19 years of age)?

- < 10%
- 10-20%
- 21-30%
- 31-40%
- 41-50%
- 51-60%
- 61-70%
- 71-80%
- 81-90%
- 91-100%

52) In your practice what is the approximate percentage of patient visits that are preventive or related to health promotion, wellness, etc.. Select one response.

- < 10%
- 10-20%
- 21-30%
- 31-40%
- 41-50%
- 51-60%
- 61-70%
- 71-80%
- 81-90%
In your practice, on average, what percentage of patient visits are episodic (same day, sick, etc.). Select one response.

< 10%
10-20%
21-30%
31-40%
41-50%
51-60%
61-70%
71-80%
81-90%
91-100%

What is your age? ______years old

What is your gender?

Male
Female

What is the highest level of schooling you have completed? (Select one)

Bachelors Degree
Masters Degree
DNP Degree
PhD Degree
DNP and PhD (dual) degree
Other (specify):
57) Which choice best describes your ethnic background? (Choose One)  
- Hispanic or Latino  
- Not Hispanic or Latino  
- Unknown  

58) Which choice best describes your racial background? (Choose One)  
- American Indian/Alaskan Native  
- Asian  
- Native Hawaiian or Other Pacific Islander  
- Black or African American  
- White  
- More than one race  
- Unknown  

59) We may want to contact you again for more detailed information or for participation in the future studies of nurse practitioners. Will that be OK?  
- Yes_______ [Direct to contact form]  
- No_______ [Thank you for completing the survey]  

Contact Form for Future Studies  
Your contact information:  
Name: ____________________________________________________________  
Mailing Address: ____________________________________________________  
Cell Phone Number: ________________________________________________  
May we contact you by texting you on your cell phone? ____ Yes ____ No  
Email Address: _____________________________________________________  

Thank you for taking the time to answer this survey!
REFERENCES


