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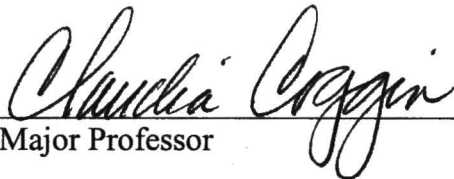
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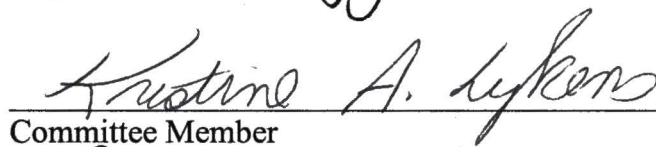
The most common cancer in the United States today is skin cancer; it is also the most preventable. At least 90% of all skin cancers is caused by sun exposure. Americans have a one in six lifetime risk of developing skin cancer and in Texas the rate is one in three. The purpose of this pilot project was to increase the level of sun protection knowledge and awareness in parents who brought their children in for a six-month immunization visit. The project was modeled after the Australian Cancer Council's "Slip! Slop! Slap!" campaign. Data was collected from five pediatric clinics in this pretest/posttest design study. Multiple variables regarding demographics, skin type, knowledge, beliefs, sun-protective practices, and attitudes were included. Overall, parental sun protective knowledge and awareness increased. The information obtained from this pilot project may influence future public health decisions regarding education and prevention of skin cancers.

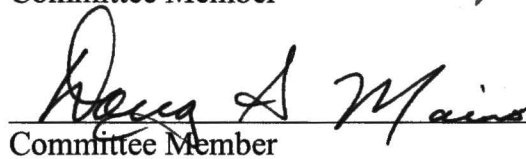
A SUN AWARENESS PILOT PROJECT

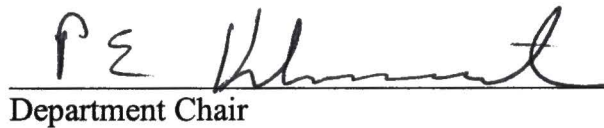
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A SUN AWARENESS PILOT PROJECT

THESIS

Presented to the School of Public Health

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CHAPTER 1

INTRODUCTION

Background

The most common cancer in the United States (U.S.) today is skin cancer; it is also the most preventable (Texas Cancer Council [TCC], 2000). At least 90% of all skin cancers is caused by sun exposure (Yohn, 2001). Americans have a one in six lifetime risk of developing skin cancer (Yohn, 2001). According to the TCC (2000) the incidence in the Sunbelt states, including Texas, is even higher, where the lifetime risk of developing skin cancer is one in three. Texas is third in the U.S. for the number of new cases of malignant melanoma, the most deadly of all skin cancers (TCC, 2000). This is an indication that skin cancer educational programs on prevention, detection, and treatment are of urgent need. The impact of skin cancer on society may be reduced by increasing the public's level of knowledge and awareness about the harmful effects of the sun and by encouraging the daily use of the recommended sun protective measures.

Skin cancer is a major health issue facing the nation in recent years. The incidence rate of melanoma increased rapidly at about 6% per year in the 1970s, however, since 1981 the rate of increase slowed to about 3% per year (American Cancer Society [ACS], 2002). With the increasing incidence it is evident that education about skin cancer is still a key factor for prevention.

Sun protection programs have been running in Australia for over twenty years: from 1980 to 1988 the Slip! Slop! Slap! campaign and the current SunSmart campaign which began in 1988 (Montague, Borland, & Sinclair, 2001). According to the Cancer Council Australia (CCA) (2001) significant positive changes in both sun-related behaviors and attitudes have been noted since starting the Slip! Slop! Slap! campaign. The evidence shows a decrease in the incidence of skin cancer among people under the age of 50 years. This project was modeled after the CCA countrywide campaign on sun protection. A review of the literature highlighted the significant success with the Slip! Slop! Slap! and SunSmart programs in which the primary focus was on decreasing sun exposure among young children and adolescents, and subsequently changing the public's attitude and behavior, and decreasing skin cancer rates (Anti-Cancer Council of Victoria [ACCV], 1999).

In assessing the project results, attention was given to characteristics related to parent's knowledge and awareness of the sun and sun protection practices used for themselves and their children. Factors that were considered include; parents' age, gender, race, ethnicity, income, marital status, education, skin type, number of children living in the home, knowledge about the harmful effects of the sun, sun protection practices, beliefs, behavior, and attitudes regarding the sun. According to Kim, Ghali, and Tunnessen (1997) children are at increased risk for sunburn and its consequences due to the amount of time they spend in the sun. Because children can benefit so much from practicing sun protection behaviors, parents and guardians can teach the importance of sun protection to children by example, encourage them to be sun-safe, and promote good

habits by providing necessary resources like shaded areas, sunscreen, and hats (Glanz, Lew, Song & Cook, 1999).

Key concepts and elements of the Health Belief Model (HBM) (Houchbaum, 1958; Rosenstock, 1974), Social Learning Theory (SLT) (Bandura, 1986), and Self-efficacy (SE) (Bandura, 1977) “were used to conceptualize skin cancer risk-reduction behavior” (Rodrigue, 1996, p. 1431) and were the theoretical basis of the project’s educational intervention. The HBM which emphasizes knowledge and perception, states that a person’s health related behavior depends on their perception of the severity of the problem or illness, their vulnerability to that problem or illness and the benefits and barriers to taking preventive action (Houchbaum, 1958). SLT depicts behavior as an interactive model involving the environment, personal and behavioral factors (Bandura, 1986). SE, a major construct of SLT is the confidence that a person has in performing a behavior in a specific situation (Bandura, 1977). SE is influenced by vicarious experiences, performance accomplishments, and verbal persuasion (Bandura, 1977).

In this pilot project, a pretest-posttest design was used to compare the effectiveness of the educational intervention used to increase the level of knowledge and awareness about the sun’s harmful effects and sun protective behaviors. The data were obtained from Cook Children’s Physician’s Network (CCPN) pediatric clinics and the ACS. Information obtained from this pilot project may influence future public health decisions regarding education and prevention of skin cancers.

Goal and Objectives

The primary goal of this pilot project was to increase the level of knowledge and awareness of parents about the harmful effects of the sun and sun protective behaviors. The objectives of this pilot project were: 1) measure any progress achieved in increasing the level of parental knowledge and awareness regarding skin cancer protection for their children, 2) measure any change in parental attitudes, behavior, and beliefs that influence the risk of skin cancer, 3) identify parental demographic characteristics (age, gender, race, ethnicity, income, level of education) related to sun protective behaviors, attitudes, knowledge and beliefs, and 4) determine if the demographic characteristics had any influence on parental encouragement of their children's sun protection. If protection from excessive sun exposure begins during early childhood and adolescence, a life-long reduced risk of developing skin cancer may result (Dixon, Borland, & Hill, 1999). It is hypothesized that parental sun protective practices would be one of the most important correlates of children's sun protective behavior in the future (Glanz et al., 1999).

Significance

Children and their parents or caregivers could play an essential role in reducing the rising incidence of skin cancer in the U.S. Skin cancers including cutaneous malignant melanoma (CMM), basal cell carcinoma (BCC), and squamous cell carcinoma (SCC), have become more widespread in the past decades (Hall, May, Lew, Koh, & Nadel, 1997). More than a million cases of curable basal cell or squamous cell cancers

occur annually. Melanoma, the most serious form of skin cancer, will most likely be diagnosed in about 53,600 persons in 2002 (ACS, 2002). Over 760,000 new cases of skin cancer are diagnosed annually in the U.S., affecting more people than any other cancer (Yohn, 2001).

Skin cancer prevention and sun protection have become key activities of the CCA and its members. Significant achievements have been made throughout Australia in raising awareness of the seriousness of skin cancer and the importance of sun protection. Australian studies have found that fewer people consider tanning to be desirable or attractive (knowing the risks) and more people are using sun protection such as sunscreen and hats whenever they are exposed to the sun (CCA, 2001). The CCA member organizations have implemented several highly successful skin cancer prevention programs over the past 15 years (CCA, 2001). According to the TCC (2000) the skin cancer prevention program in Australia is a useful model for skin cancer prevention in Texas. The startling statistics indicating that two of three Australians will develop skin cancer in their lifetime was the cornerstone to the skin cancer prevention campaign in Australia since 1980 (TCC, 2000). SunSmart, a highly structured information and prevention campaign was started in 1988 by the ACCV. ACCV made skin cancer awareness and policy major priorities in schools, workplaces, and recreational organizations, with a 50% decrease in sunburn rates and a reduction in non-melanoma skin cancers (TCC, 2000).

The American Academy of Dermatology (AAD), Skin Cancer Foundation (SCF), ACS and other organizations have recommended sun protective measures such as

wearing protective clothing, avoiding sun exposure during the midday hours when the sun's harmful rays are the strongest (10 a.m. – 4 p.m.), limiting the amount of time spent in the sun, and using sunscreen with sun protection factor (SPF) 15 or higher on a regular basis to reduce exposure to the sun's harmful ultraviolet (UV) rays. These behavioral recommendations for primary prevention are very important for sun safety in infants and children, because sun exposure during early years of life increases the risk of MM, the most serious form of skin cancer (Anonymous, 1998).

Childhood is a period of life in which prolonged sun exposure is especially common (Martin, Jacobsen, Lucas, Branch, & Ferron, 1999). According to Kim et al., (1997) by the time they are 18 to 21 years of age, most people have received 80% of their lifetime exposure to the sun. In addition Robinson, Rigel, and Amonette (2000) states that an estimated 50% - 80% of the skin's lifetime sun damage occurs during childhood and adolescence. During these critical periods, intense, intermittent sunlight exposure causing burning increases melanoma risk. However, if sunscreen use is implemented between birth and 20 years of age, a child's lifetime risk of nonmelanoma skin cancer is decreased by 85% (Buller & Borland, 1998). Regardless of the apparent benefits, sun protection and sunscreen use have not received the attention they deserved as part of primary prevention in healthcare (Hurwitz, 1988). This is an indication of the urgency of increasing the level of knowledge and awareness about skin cancer, and making prevention a routine part of everyday life in Texas and throughout the U.S.

The focus of the project was to assess the level of parents' knowledge, awareness, attitudes, beliefs, and behavior towards the sun, and the level of parents' encouragement

to have their children use sun protective measures. Increasing the public's knowledge and awareness about the harmful effects of the sun is a challenge, because most people perceive the sun as being good (healthy) for different reasons. Primary prevention, the public health approach to skin cancer prevention, including melanoma, requires a solid understanding of the role that ultraviolet radiation (UVR) plays in the development of these tumors. With a clear understanding of exactly how UVR causes skin cancer, there is enough evidence to suggest a broad approach to the problem. This includes reduction of the sun's UV exposure, especially during childhood and adolescence (Marks, 1999).

CHAPTER 2

REVIEW OF THE LITERATURE

Skin Cancer

The skin, the largest organ in the body, in its healthy state, protects the body against infection, injury, light and heat. It also stores water, fat, vitamin D, and helps with the regulation of body temperature. Skin cancer is a disease in which malignant or cancer cells are found in the top (outer) layers of the skin (National Cancer Institute [NCI], 2000). Non-melanoma skin cancer [basal cell carcinoma (BCC) and squamous cell carcinoma (SCC)], and cutaneous malignant melanoma (CMM) develop from epidermal cells, which are located in the uppermost level of the skin. The epidermis consists of three layers: a top or protective layer, a middle squamous cell layer, and a bottom or basal cell layer. The melanin producing cells (melanocytes) are usually found just above the basal cell layer (Texas Cancer Council [TCC], 2000). Melanin is responsible for the skin pigmentation (darkening) seen after ultraviolet (UV) exposure. The melanocytes normally release additional melanin granules in an attempt to reduce radiation damage to skin cells (TCC, 2000). According to Hurwitz (1988), 90% of all skin cancers occur on sun-exposed areas of the body. These sun-exposed areas include the face, shoulders, scalp, hands, feet, ears, and the back of the neck. Protection of these areas early in childhood by using sun protective measures such as sunscreen, umbrellas, seeking shade, sunglasses, staying out of the midday sun, and wearing protective clothing

(wide-brimmed hats, long sleeve shirts, long pants and skirts), are all very significant steps in reducing the chances of severe sunburns and the development of skin cancers later in life.

Risk factors

Skin cancer does not discriminate it can affect anyone, however, individuals with certain risk factors are particularly at higher risk (Centers for Disease Control & Prevention [CDC], 2002). Genetic factors for non-melanoma skin cancers include fair skin, light-colored eyes (blue & green), and light colored hair. Men are two times as likely as women to have BCC, and have three times the risk of developing SCC (TCC, 2000). Individuals at increased risk for melanoma are those with red or blond hair and fair skin that freckles or burns (Gilchrest, Eller, Geller & Yaar, 1999). The risk of malignant melanoma (MM) is about 20 times higher in Caucasians than for African Americans (TCC, 2000). Other risk factors for non-melanoma skin cancers include chemical exposure (arsenic, coal, paraffin, industrial tar, and certain types of oil), skin damage from radiation treatments, inflammation, or burns, and psoralen and UV light (PUVA) used to treat psoriasis. MM has other risk factors including: personal/family history, moles (dysplastic nevi increase the risk by 6-10%), severe sunburns during childhood, immune suppression (TCC, 2000) and the amount of time spent on the beach during holiday (Zanetti, Franceschi, Rosso, Colonna, Bidoli, 1992). Contributing factors to skin cancer in Texas include latitude, altitude, size in square miles, agriculture and more farmed land, square miles of inland water and coast length supporting recreation, all

of which involve exposure to ultraviolet radiation (UVR) (TCC, 2000). With both non-melanoma and melanoma skin cancers the incidence increases with age exponentially (Gilchrest et al., 1999), however, between the age of 20 and 45 the frequency of melanoma peaks (Jerant, Johnson, Sheridan, & Caffrey, 2000). Occupational exposure is also major risk factor. Outdoor workers have a higher incidence of nonmelanoma skin cancers which primarily affects the elderly, while indoor workers have a higher risk of melanoma which peaks between the ages of 20 and 45 (Jerant et al., 2000). According to Lim et al., (1999) the higher risk of melanoma in indoor workers is due to intermittent and not cumulative (long-term) sun exposure. The most important environmental factor in the development of skin cancer appears to be exposure to the sun's UV rays. Normally ozone filters out UV light, however, due to the ozone hole in the atmosphere the level of UV light is much more intense today than it was 50 to 100 years ago (South Seas Trading, 1999). Thus, skin cancer is a largely preventable disease when sun protective measures and behaviors are consistently applied and utilized (CDC, 2002).

Education

“Education is a key component in minimizing injury from sun exposure” (Starr, 1999, p. 136). This project focuses on parental responses to the series of questions asked as proxy measures for their children's risks and prevention. Today, daycare and preschool programs are the norm for a great part of a child's day, however, parents remain the primary caregivers and educators of children and are ultimately responsible for their health, safety, and well-being (Hendricks & Reichert, 1996). Hendricks and Reichert

(1996) also state that parents have a natural desire to protect their children and put their children's well-being and health as a primary responsibility. Parents want to know how to keep their children as healthy and safe as possible. In addition, guidance is also important for parents in order to help them in carrying out optimum health for their young children.

Lim and Bergfeld (1999) suggest that culture, ethnicity, gender, and age be reflected in educational messages. They also suggest that an integral part of the educational message should include the important fact that skin cancer is one of the most prevalent cancers and, if detected early, cure is possible. There is an urgent need to educate the public on the warning signs of melanoma and non-melanoma skin cancers. These signs include looking for asymmetry in skin lesions, border irregularity, color variation, and a size greater than 6 mm diameter, collectively known as the ABCD rule (Lim & Bergfeld, 1999).

Health education is a very important tool used to help promote change in people's behavior. According Rodrigue (1996) for health educational messages to be most effective, they must include the following: (1) there must be a significant potential threat to one's health from continued high-risk behavior; (2) that personally vulnerability must be involved for persons engaging in such activities or acting on the behalf of others' healthcare needs; (3) that risk can be greatly reduce by modifying behavior; and (4) that benefits of modifying a high risk behavior outweighs the costs of not changing it.

Theoretical framework

There are several barriers to behavioral change in humans, including baseline knowledge and perception. The HBM states that a person's health related behavior depends on his/her perception of (1) the severity of the problem or illness, (2) his/her vulnerability to that problem or illness, and (3) the benefits and barriers to taking preventive action (Houchbaum, 1958; Rosenstock, 1974). In this case the model predicts that a person is more likely to protect themselves from the sun if he/she believes that skin cancer can be prevented with such protective behaviors and that the benefits outweigh any barriers or costs involved Bandura's work (as cited in Glanz et al., 1999). SLT depicts human behavior as an interactive model involving the environment, personal, and behavioral factors (Bandura, 1986). According to Glanz et al. (1999) environmental factors and characteristics of sun protection include the availability of sunscreen and shaded areas, as well as parental behaviors and perceived sun protective norms. SE, a major construct of the SLT, is the confidence that people have in performing a behavior in a specific situation (Bandura, 1977), i.e. parental self-efficacy and knowledge to provide sun protection for themselves and for their children (Tripp, Herrmann, Parcel, Chamberlain, & Gritz, 2000). These factors are all deemed important as they may influence a person's decision to change a behavior. When the modeled behavior is very obvious, innovative behavior even for people who are not closely associated with the model can be learned from that model (Bandura, 1986). The theoretical models are used to explain how well parents' beliefs and actions predict sun protective behaviors for their children (Glanz et al., 1999).

Prevention

The key to skin cancer prevention is education about reduction of UVR exposure by using protective clothing, applying sunscreen, seeking shade when it is possible, and avoiding the use of tanning beds. Lim and Bergfeld (1999) point out that one of the earliest “teachers” is parental behavior. According to Loescher, Buller, Buller, Emerson and Taylor (1994) if preventive behaviors are adopted during early life, they may be easily maintained than if they are developed as an adult. Thus, education about overexposure to UVR should be a top priority in very young children. Sun exposure is said to be responsible for an estimated 90% of the 800,000 non-melanoma skin cancers. It is further estimated that 80% of one’s lifetime sun exposure occurs before age 20 (Everett, Graham, & Colditz, 1997). Many simple steps can be taken to avoid sun overexposure (wear protective clothing, seek shade, use SPF 15, avoid the midday sun, and use sunglasses). These measures are very important to remember on a daily basis, all year round and during all outdoor activities, not just when at the beach or pool (CDC, 2002). Because early childhood sun exposure, especially severe sunburns, is associated with increased risk of skin cancer in later years, children, their parents, and caregivers are the best targets for skin cancer prevention education. However, although no scientific evidence exists, it is recommended that sunscreen not be applied to children under six months of age because children this young may have different absorptive characteristics and may not be able to excrete sunscreen chemicals absorbed through the skin. Avoiding sun exposure and using protective clothing are thus better options for very young children (Everett et al., 1997).

Impact on public health

“Skin cancer represents a significant public health problem in the United States” (U.S.) (Tripp et al., 2000, p. 395). According to the American Cancer Society (ACS) (2002) more than a million cases of BCC or SCC occur yearly. Since 1981, the incidence of melanoma has increased by seven percent per year on the average to a rate of 14.3 per 100,000 in 1997 (CDC, 2002). Greater than a third of all cancers originate in the skin (Parker, Tong, Bolden & Wingo, 1996). It is estimated that the total number of skin cancers in the U.S. has increased annually from 300,000 in 1987 to more than 1,000,000 in 1996 Cancer Statistics data (as cited in Rigel, Friedman & Kopf, 1996). During this period the estimated lifetime risk for the development of a skin malignancy in the U.S. population has increased from a low of one in ten to a high of one in six (Rigel et al., 1987).

The magnitude of the skin cancer problem is recognized and acknowledged by *Healthy People 2010* (Objective 3.9), a set of national health promotion and disease prevention objectives for the U.S. The goal for skin cancer is to “increase the proportion of persons who use at least one of the following protective measures that may reduce the risk of skin cancer: avoid the sun between 10 a.m. and 4 p.m., wear sun-protective clothing when exposed to sunlight, use sunscreen with SPF 15 or higher, and avoid artificial sources of UV light” (U.S. Department of Health & Human Services, 2000).

Over the past several decades skin cancer incidence has risen as a result of increased sun exposure associated with societal and lifestyle changes in the U.S.

population, and depletion of the protective ozone layer (Jerant et al., 2000). In the U.S., MM is the eighth most common cancer and the incidence is rising (Jerant et al., 2000).

According to the TCC (2000) \$563 million was spent on treating newly diagnosed MM, in which a large proportion of the cost was due to treatment of advanced disease. Jerant et al. (2000) stated that 75% of all skin cancer deaths are due to MM. Thus, primary prevention and early detection are key factors in decreasing the number of advanced cases of MM requiring treatment. These factors will aid in lowering the cost of treatment for MM.

CHAPTER 3

METHODS

Ethical consideration

Prior to the beginning of this sun awareness project, a proposal for the research was submitted to the Institutional Review Board (IRB) at the University of North Texas Health Science Center at Fort Worth to ensure that the proper steps were taken to protect the rights and secure the welfare of human subjects. In addition, Cook Children's Physician Network (CCPN) IRB granted permission to conduct the pre-test in their clinics. The participants were parents of six-month old infants who came into the pediatrician's office for their six-month immunization or well child visit. No participant identifiers were recorded on the pre and post-tests.

Phase I

A 14-question instrument developed by the investigator was administered to the participants [see Appendix]. The intervention began in mid-April (pre-summer) of 2001 in five pediatric clinics affiliated with CCPN. The clinics were chosen by a CCPN clinical operations manager, based on the patient population, volume, and the number of staff available in those clinics to assist in carrying out the project. The pre-evaluation questionnaires and telephone number data sheets (TNDS) were numerically coded by the

investigator to avoid recording participant identifiers. These items were delivered to all of the clinics by the clinical operations manager. A Slip! Slop! Slap! video from the American Cancer Society (ACS) was delivered to four of the five clinics to be played randomly in the waiting rooms. The fifth clinic did not have a videocassette recorder, and thus did not receive the videotape. The information and instruction for the clinics' staff were given to the clinical operations manager by the investigator. Staff members at each clinic were educated by the clinical operations manager as to the purpose of the study and their role in carrying out the given instructions correctly. An informed consent form provided by CCPN was included with the instrument and TNDS. Prior to the pretest, consent forms were to be completed and kept in the participant's clinical chart. Although there was no way of assessing whether the instructions were given as instructed, they were: (1) participants and their children should be in for a well child or six-month immunization visit, (2) participants must voluntarily participate, (3) informed consent and a numerically coded telephone number sheet should be completed, (4) the numerically coded pre-evaluation questionnaire must be filled out by the participant prior to their receiving the gift bags that were distributed; (5) to collect all pre-evaluation questionnaires and TNDS; (6) to give the participant a gift bag, and to say the following: "This bag contains information that you should use to protect yourself and your family from the sun, whenever you are outdoors, always remember to seek shade, stay out of the midday sun (10 a.m. – 4p.m.), SLIP! On a shirt, SLOP! On sunscreen with SPF 15+, cover your ears, face, neck, back of your hands, and top of your feet, SLAP! On a hat WRAP! On sunglasses, and don't forget to wear cool long sleeve tops and long bottoms.

If you are going out in the sun for prolonged periods, don't forget to reapply you sunscreen every 2 hours."

According to Bandura (1986) incentives have been used as a way to reduce perceived barriers and to motivate people to act. The gift items were provided by the ACS and included the following: a tote bag with the Slip! Slop! Slap! slogan on one side, pink wide-brimmed hats donated to ACS by Chelsea & Scott (One Step Ahead) or blue wide-brimmed hats with the Slip! Slop! Slap! slogan provided by ACS, samples of Cetaphil face moisturizer with SPF 15 from Galderma, Neutrogena KIDS sunblock with SPF 30, a \$1.00 manufacturer's coupon (no expiration date) from Johnson & Johnson, a white t-shirt with the Slip! Slop! Slap! slogan in red on the front, ACS SLIP! SLOP! SLAP! literature including: a parent's guide to sun protection (Skin Protection Guide for Everyone Under the Sun), and Sun Basics (Skin Protection Made Simple for Everyone Under the Sun). The Sun Basics pamphlet was colorful with children and the following questions on the front: "Why is this tiger a cool cat?" "When is it ok to be red like a lobster?" "What can you do so your skin won't change color like a chameleon?". At the end of Phase I (December 14, 2001) pre-intervention data were collected from 57 participants, of which 51 (89%) agreed to be called back, 4 (7%) asked not to be called back, and 2 (3.5%) did not want to respond to the call back questions. The completed fifty-one numerically coded pre-evaluation surveys and TNDS were collected from CCPN pediatric clinics by ACS staff. The collected data were then sorted by the investigator and were prepared for phase II of the study.

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Phase II

Phase II of the study began on January 14, 2002. The numeric codes from the TNDS were transferred to the post-intervention instrument. In addition, to facilitate the follow-up telephone calls by the ACS call center in Austin, Texas the investigator indicated the persons (i.e. mom or dad) that completed the pretest, by transferring that information to the posttest. This enabled the ACS callers to ask for the person who completed the pretest to complete the post-intervention evaluation. The demographic questions were not repeated, unless the callers were instructed by the investigators to obtain missing demographic information on specific instruments. Thus the posttest began with question nine. The calling was done at random times during the day and each person was called an average of three times. Of the 51 pre-evaluation participants, 22 (43%) were contacted and completed the post-intervention instrument, 8 (16%) were contacted but refused to participate, 8 (16%) had wrong telephone numbers, 2 (4%) did not answer their telephones after five attempts, 6 (12%) had their answering machines on for five attempts, and 5 (10%) had caller ID screening which rejected the telephone calls.

Measures

Parent questionnaires [see appendix] asked about demographic characteristics of the parent, knowledge about skin cancer and sun protection, attitudes, beliefs, and skin cancer risk factors (skin type). Parents were also asked questions about the sun protection practices that they use for their children. The questions included in the survey were selected and/or adapted from previous surveys published in the literature on this

topic. Parent skin types (skin cancer risk factors) were assessed by a series of ethnic background, complexion, and sun susceptibility combination questions, which were adapted and modified from Fitzpatrick (1988) and Starr (1999). Composite scores were created for some survey items because behavioral and psychosocial variables were used as measures (Glanz et al., 1999). Indexes were created for the belief, knowledge, and behavior questions. The index indicates the number of positive responses to a given question, which were assigned numbers ranging from 1 – 9 indicating the score for that question. Nine protective behaviors (wear sunscreen or sunblock, apply sunscreen at least 30 minutes before going outdoors, wear a wide-brimmed hat, wear a long sleeve shirt, a long pants or skirt, use an umbrella, seek shade when possible, wear sunglasses with ultraviolet (UV) protection, reapply sunscreen every two hours, and stay out of the midday sun) were used to measure sun protection practices. Each response was given an additive score ranging from 1 (rarely engage in sun protective practices) to 9 (highly engage in sun protective practices). A higher index correlated to more knowledge or awareness that a participant had about that particular question relating to sun and sun protection.

Participant attitudes towards the sun were measured by a healthy or unhealthy attitude towards the sun index. Unhealthy attitudes were indicated by a negative index score (scored 1), and healthy attitudes were indicated by a positive index score (scored 2). This index was calculated by identifying each response as negative or positive attitude toward the sun (i.e. if the sun makes vitamins was checked, it was scored +1, if the sun clears up my skin was checked, it was scored –1). The strength of association was

measured on an ordinal scale by the total number of items checked, ranging from one to eight. If one item was checked, then the strength of association equals 1, corresponding to unhealthy attitudes. If eight items were checked then the strength of association equals 8, this corresponded to healthy attitudes. The same survey item was used as to measure the participants' beliefs about the sun. Similar approaches were used to measure knowledge about the areas of the body that should be protected from the sun, parental sun practices and children sun practices as indicated by their parents. Ten items were listed to assess body protection knowledge (eyelids, nose, ears, neck, cheeks, shoulders, scalp, lips, hands, and feet). If more than five of these items were checked, it was scored 1 (highly knowledgeable), if five items were checked this was scored 2 (knowledgeable), and if less than five items were checked it was scored 3 (limited knowledge).

Statistical analysis

The Statistical Package for the Social Science (SPSS) software Version 10.0 was used to conduct the data analyses. After the frequencies and percentages for the variables of interest were calculated, paired t-tests were conducted on responses comparing the pre-evaluation responses to the post-intervention responses. Independent variables of interest included participant characteristics (age, gender, race, ethnicity, income, education, marital status, skin type, number of children living in the home). Dependent variables included parent's knowledge about the sun, sun protection practices, beliefs, behaviors, and attitudes regarding the sun. A descriptive analysis of the data was obtained by running frequency distributions of the variables. This was done to identify participant

characteristics and other characteristics related to the sun and sun practices. t-tests were performed on dependent variables to look at the differences of means and to compare any increases in knowledge, beliefs or practices based on the questions asked. Bivariate crosstabulations (chi-square tests) were performed to test the independence of participant characteristics such as age, gender, ethnicity, race, education, marital status, income, number of children and knowledge, attitudes, beliefs, and behaviors about sun protection practices. In this pilot project, t-tests and chi-square (χ^2) test were used as tests of significance. Since this is a pilot project the minimum acceptable level of statistical significance, 0.10 or less was considered appropriate.

CHAPTER 4

RESULTS

Sample Characteristics

Twenty-two of the 51 participants (43%) who agreed to a return telephone call were contacted by telephone, and complete the post-evaluation survey. According to Munro (1997) sample size is related to significance level. Due to the small sample size ($N = 22$) some of the results were not significant at alpha (α) level of 0.10. There were no missing data on participant demographics, however, there was less than 5% of missing data for knowledge, attitudes, beliefs, and behaviors on both the pretest and posttest. Descriptive statistics, paired t-tests, crosstabulations and chi-square (Pearson r) statistical tools were used to describe the findings of this project. Patient race was classified as White, Black, Asian, Native American, or other. Ethnicity was based on Hispanic or Non-Hispanic origin. Table 1 shows the demographic characteristics of the respondents (parents). More than 86% of the respondents were female (mostly mothers), and were almost equally divided between those having one child and those having more than one child. The majority (55%) of the respondents were age 31 to 40. Ethnic distribution included 86% White non-Hispanics, 9% Hispanics, and 5% Black non-Hispanic. Ninety-one percent were married, with 46% having only one child less than 24 months of age. More than 95% had annual household incomes greater than \$21,000. Forty-one percent

had at least some college education, 36.3% were college graduates, and 13.6% had some form of graduate or professional school.

Table 1. Demographic Characteristics of the Parents (Participants) (N = 22)

Characteristics	n	%yes
Parents' gender		
Male	3	13.6
Female	19	86.4
Parent's age range		
< 20	1	4.5
20 - 30	9	40.9
31 - 40	12	54.5
Ethnicity/race		
White, non-Hispanic	19	86.4
Black, non-Hispanic	1	4.5
Hispanic	2	9.1
Number of children		
One	10	45.5
Two	8	36.4
Three	3	13.6
Four	1	4.5
Marital status		
Single	2	9.1
Married	20	90.9
Divorced/separated/widowed	0	0.0
Income		
<\$21,000	1	4.5
\$21,000 - \$65,000	12	54.5
More than \$65,000	9	40.9

Table 1. Continued.

Highest level of education completed	2	9.1
Completed high school	9	40.9
Completed some college	8	36.3
Completed college	3	13.6

Participants' skin type

Table 2 describes the frequencies of the participants' skin types and ethnic origin (skin cancer risk factors). Fifty percent of the participants indicated that they sometimes burn and gradually tan, while 27% indicated that they are fair, easily burn, and minimally tan. Only 9% of the participants were in the high risk, Celtic, Irish skin prototype group.

Table 2. Participants' Skin Types (N=22)

Skin type	n	%yes
Fair, always burns, never tans (Celtic, Irish)	2	9.1
Fair, easily burns, minimally tans (Caucasian)	6	27.3
Sometimes burns, gradually tans (dark Caucasian)	11	50.0
Minimally burns, always tans (Mediterranean, Asian, Hispanic)	2	9.1
Rarely burns, always tans (American Indian, Mid-Eastern, Hispanic)	0	0.0
Rarely burns, always tans (Black, American or other origin)	1	4.5

Participants' attitude, knowledge, behavior, and beliefs

The frequencies of scores on the open-ended question assessing parental attitudes, knowledge, behaviors, and beliefs, relating to the sun and sun protection are outlined in Table 3. Prior to the intervention, 96% of the participants indicated that they enjoyed being out in the sun (attitude), compared to 91% after the intervention. Sixty-four percent pre-intervention indicated that they believe tans were healthy (attitude), this dropped to 36.4% ($p < 0.10$) post-intervention. On another attitude question 68.2% prior to the intervention and 72.7% after the intervention indicated that being in the sun was healthy, and only 27.3% indicated that they used a tanning salon (behavior) prior to the intervention compared to 13.6% ($p < 0.10$) after the intervention. One-half of the participants indicated that they used sunscreen or sunblock on cloudy and overcast days (behavior) before and after the intervention. An impressive 96% of the participants indicated that they have heard of SPF (sun protection factor) a knowledge indicator prior to the intervention, however, counter to expectations this decreased to 91% after the intervention. These results showed an overall increase in the participants' attitudes and behavior relating to the sun and sun protective measures with statistically significant results in the use of tanning salons and whether tans are healthy. However, the paired t-test analyses failed to show significant results at alpha level of 0.10 for any of the remaining four questions asked. Crosstabulations (χ^2) showed no significant effect of parent's age, gender, ethnicity, race, education, and income on attitudes, knowledge, behaviors, and beliefs.

Table 3. Participants' Knowledge, Attitudes, Behaviors, and Beliefs (N=22)

Specific Question: % answering yes	Pretest		Posttest		PD ^a
	n	%	n	%	
Do you enjoy being out in the sun?	21	95.5	20	90.9	0.58
Do you use a tanning salon?	6	27.3	3	13.6	0.08*
Are tans ever healthy?	14	63.6	8	36.4	0.09*
Is being in the sun healthy?	15	68.2	16	72.7	0.54
Do you use sunscreen/sunblock on cloudy or overcast	11	50.0	11	50.0	1.00
Have you ever heard of SPF?	21	95.5	20	90.5	0.33

^aPaired Differences (PD), *Statistically significant (χ^2 , $p < 0.10$).

Healthy and unhealthy attitudes towards the sun were assessed with the questions outlined in Table 4. Prior to the intervention 40.9% of the participants indicated that the sun made vitamins compared to 81.8% after the intervention ($p < 0.05$). Fifty-nine percent of the participants indicated that the sun made them feel good before the intervention; this increased to 95.5% after the intervention. Prior to the intervention, 27.3% said that the sun cleared up their skin, compared to 64% after the intervention. Twenty-three percent of the parents knew that the sun caused cataracts prior to the intervention, which increased to 55% after the intervention ($p < 0.05$). When asked if the sun causes wrinkling, 81.8% said yes prior to the intervention and 100% said yes after the intervention ($p < 0.05$). Other questions regarding attitudes towards the sun did not show significant results. The index score for attitudes towards the sun was highly significant at

$p \leq 0.001$. On average, the participants cited 4.86 (SD = 2.56) of the items pre-intervention, compared to 6.45 (SD = 1.63) cited post-intervention.

Table 4. Parents' Attitudes Towards The Sun (N=22)

Specific attitude: % answering yes	Pretest		Posttest		PD
	n	%	n	%	
Makes vitamins	9	40.9	18	81.8	.009*
Makes me feel good	13	59.1	21	95.5	.002*
Makes me look good	13	59.1	18	81.8	.057
Clears up my skin	6	27.3	14	63.6	.002*
Causes skin cancer	22	100	21	95.5	.329
Causes cataracts	5	22.7	12	54.5	.016*
Causes sun burn	21	95.5	21	95.5	1.00
Causes wrinkling	18	81.8	22	100	.042*

Attitudes towards the sun – Index SA^a 1= low 9 =high

Mean (SD)	4.86	(1.52)	6.45	(1.63)	.001**
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*Statistically significant (χ^2 , $p < 0.05$); **Highly significant; ^aStrength of Association.

The indexed data on parental sun protective practices in Table 5 showed a significant difference overall in the sun protection measures used by parents ($p < 0.05$). Of the nine sun protection practices listed, the participants cited on average 3.1 (SD=1.34) pre-intervention and 4.0 (SD=1.84) on the post-intervention. Of these sun protective practices, 27.3% of parents said that they avoided the midday sun prior to the intervention while 59.1% did so after the intervention ($p \leq 0.05$). None of parents indicated wearing protective clothing when they were out in the sun prior to the intervention, however, this behavior significantly ($p < 0.10$) increased to 13.6% post-intervention. All of the other sun

protective behaviors including application of sunscreen 30 minutes prior to going outdoors (pretest 18.2%, posttest 36.4%), wearing sunscreen/sunblock (pretest 63.6%, posttest 63.6%), seeking shade (pretest 59.1%, posttest 77.3%), and reapplying sunscreen every 2 hours (pretest 31.8%, posttest 50.0%) did not show significant results, although some did increase post- intervention.

Table 5. Parents' Sun Protection Practices

Specific Practices: % answering yes	Pretest		Posttest		PD
	n	%	n	%	
Apply sunscreen 30 minutes before going outdoors	4	18.2	8	36.4	.162
Wear sunscreen/sunblock	14	63.6	14	63.6	1.0
Wear a wide-brimmed hat	2	9.1	1	4.5	.329
Seek shade	13	59.1	17	77.3	.162
Use an umbrella	0	0	2	9.1	.162
Wear sunglasses with UV protection	18	81.8	17	77.3	.665
Reapply sunscreen every 2 hours	7	31.8	11	50.0	.213
Avoid midday sun	6	27.3	13	59.1	.05*
Wear protective clothing	0	0	3	13.6	.083*
<u>Parents' sun protective practice – index</u>					
Mean (SD)	3.1	(1.34)	4.0	(1.84)	.038*

*Statistically significant (χ^2 , $p < 0.10$).

Table 6 shows the sun protection measures that parents used for their children, or encouraged their children to use. The application of sunscreen 30 minutes before going outdoors increased by 13.7% after the intervention, sunscreen/sunblock use increased by 13.6%, the use of a wide-brimmed hat increased by 22.7%, and reapplication of sun screen increased by 18.2%. Seeking shade and avoidance of the

midday sun significantly increased by 22.8% ($p < 0.10$) and 31.8% ($p < 0.10$) respectively. Parents cited on average 4.62 (SD=1.34) on the pretest and 5.62 (SD=1.84) on the posttest when asked about the sun protection practices used for their children. The overall paired difference test was not significant. Parents used more sun protective measures for themselves on average, than they did for their children. Parents used sunglasses (81.8% pretest) more and did not practice or encourage this behavior to the same degree in their children. The most frequently used sun protective measures both for parents and their children were sunscreen/sunblock, avoidance of the midday sun and seeking shade.

Table 6. Parents' Sun Protection Practices for their Children

Specific Practices: % answering yes	Pretest		Posttest		PD
	n	%	n	%	
Apply sunscreen 30 minutes before going outdoors	12	54.5	15	68.2	.33
Wear sunscreen/sunblock	17	77.3	20	90.9	.19
Wear a wide-brimmed hat	11	50.0	16	72.7	.14
Seek shade	14	63.6	19	86.4	.09*
Use an umbrella	5	22.7	5	22.5	1.0
Wear sunglasses with UV protection	13	59.1	13	59.1	1.0
Reapply sunscreen every 2 hours	11	50.0	15	68.2	.213
Avoid midday sun	10	45.5	17	77.3	.07*
Wear protective clothing	5	22.7	3	13.6	.427
<u>Parents' sun protective practice for children –index</u>					
Mean (SD)	4.62	(1.34)	4.0	(1.84)	.013

*Statistically significant (χ^2 , $p < 0.10$).

Table 7 shows the frequencies and percentages of those responding yes on the pre and posttest. Participants' overall scores were significantly higher, 90.9% on the pretest, as compared to 63.6% on the posttest for the knowledge measures related to areas of the body that should be protected from the sun, ($p < 0.05$). The areas that were most frequently indicated by participants as being protected from the sun on the pretest and posttest respectively included nose (100%, 63.6%), ears (90.9%, 50.0%), neck (90.9%, 59.1%), lips 81.8%, 31.8%), and feet (81.8%, 40.9%). The other areas indicated as needing less or no protection from the sun, included the eyelids, cheeks, shoulders, scalp, and hands.

Crosstabulations and chi-square (Pearson χ^2) statistical tools were used to determine whether an association exists among participant characteristic variables (age, gender, ethnicity, race, number of children, marital status, level of education, income) and expected sun protective practices, knowledge, attitudes, behaviors, and beliefs. None of the parent demographic characteristics were significantly associated with parent sun protective behaviors, children's sun protective behaviors, parents' attitudes, beliefs, or behaviors relating to the sun and sun protection. An explanation for these findings maybe in addition to the small sample size ($N=22$), the sample characteristics were positively skewed to the 31 to 40 age range 12 (54.5%), female gender 19 (86.4%), ethnicity/race 19 (86.4%) were White non-Hispanic, 17 (77.2%) had some college or have completed college, 20 (90.9%) were married, 12 (54.5%) had a household income of \$21,000 to \$65,000, and 9 (40.9%) had a household income of more than \$65,000.

Table 7. Parental Sun Protective Knowledge

Specific areas to be protected:	Pretest		Posttest		PD
	n	%	n	%	
Percent answering yes					
Eyelids	17	77.3	14	63.6	.378
Nose	22	100	14	63.6	.002*
Ears	20	90.9	11	50.0	.004*
Neck	20	90.9	13	59.1	.031*
Cheeks	20	90.9	14	63.6	.056
Shoulders	21	95.5	17	77.3	.104
Scalp	18	81.8	11	50.0	.069
Lips	18	81.8	7	31.8	.001*
Hands	16	72.7	13	59.1	.418
Feet	18	81.8	9	40.9	.017*
<u>Knowledge index</u>					.018*
Highly knowledgeable	20	90.9	11	50.0	
Knowledgeable	0	0.0	3	13.6	
Limited knowledge	2	9.1	8	36.4	

*Statistically significant (χ^2 , $p < 0.05$).

Perceived barriers (healthy tans, being out in the sun ever healthy, application of sunscreen prior to going outdoors) and perceived benefits (use of sun screen, protective clothing, use of umbrella, seeking shade, avoidance of the sun between 10 a.m. – 4 p.m.) were also not significantly associated with parent and children's (as reported by their parents) sun protection, however, there was a decline in the attitude that suntans are healthy, and in behaviors that affect skin cancer risk.

CHAPTER 5

DISCUSSION

Conclusions

In this pilot project self-reported baseline data was obtained from parents about sun protective measures that they use for themselves and their children. In addition to the baseline data, knowledge, attitudes, and beliefs about sun and sun protection were investigated. In this study participant demographic characteristics (age, gender, ethnicity, race, education and income), cannot be generalized to the population at large because they were skewed to highly educated Caucasians with high incomes. However, other findings of this project parallel findings in the literature on previous skin cancer research. Robinson, Rigel, & Amonette (1997) found that among adults there was an increase in awareness that sun exposure is dangerous, a decrease in the belief that tans are healthy, and a reported increase in the use of sunscreens, as the results of this study also showed. According to Bandura's (1986) Social Learning Theory (SLT) people can learn by observation. Parents need to adopt a daily routine of using sun protective measures for themselves, giving their children the opportunity to observe these behaviors beginning at an early age. Thus the parents of six-month old infants were the population of interest. Protection of children from overexposure to the sun is an important responsibility for parents, guardians, and physicians, and should ideally become an everyday habit for everyone (Hurwitz, 1988). However, parents still generally inadequately protected their

children from sun overexposure (Robinson, Amonette, Wyatt, Bewerse, Bergfeld & Farris, 1998).

Despite the limitations of the data, significant differences were found in the study results. Prior to the intervention participants were knowledgeable about the risks of ultraviolet radiation (UVR) exposure but were behaviorally less inclined to act on their knowledge (Boutwell, 1995). Ingham and Bennett's study (as cited in Rodrigue, 1996) indicate that behavioral change is not a result of knowledge alone, and that without additional health-related attitudes and belief modification such change is usually not maintained. According to Cody & Lee, 1990; Hughes et al., 1993; Katz & Jernigan, 1991; Mermelstein & Riesenber, 1992 (as cited in Rodrigue, 1996) maintenance of behavioral change has been difficult to pinpoint in previous sun-protection promotion efforts.

Most of the participants indicated Fitzpatrick's type III skin phenotype based on their ability to tan, followed by skin phenotype II who are at a greater propensity to burn. These participant skin types may have accounted for the significantly high knowledge base about the sun and sun protection practices, as they may have been familiar with sun protective measures prior to this study and they were well educated. Participants enjoyed being out in the sun, they indicated that they used tanning salons, felt that tans were healthy, and were aware of sun protection factor (SPF). After the intervention it was clear that a significant number of participants made behavioral changes and were more aware of risk of ultraviolet damage to the skin. Overall, there was a highly significant increase from baseline to completion of the pilot project in attitudes towards the sun,

despite the small sample size. This is very important because changing attitudes is just the beginning of the long and difficult process of behavioral change.

Results of the study also indicated significant increases in the sun protection practices that parents performed for their children or encourage their children to perform, compared to practices they engage in for themselves. This is consistent with findings by Robinson, Rigel, and Amonette (2000). However, parents were more engaged in specific (wearing sunglasses) and overall sun protective behaviors for themselves than for their children. Although not statistically significant the results suggest that parents either performed the sun protective measures for their children or encouraged their children to engage in the sun protective behavior. This was consistent with the predictions of parental modeling based on SLT constructs and Self-efficacy (SE) theory. In addition, findings in this study parallels the Health Belief Model's perceived benefits and perceived barriers consistent with Glanz et al. (1999) findings. According to Autier & Dore (1998) sun exposure during childhood is difficult to assess and thus is underestimated in sun-protection studies. Bandura, 1986; Maddux & Rogers, 1983 (as cited in Rodrigue, 1996) state that "theories of health promotion emphasize the relative importance of attitudes and beliefs in the modification of health behaviors."

The results of parental knowledge from the educational demographics were significantly high at baseline and improved over the length of the study. Behavioral responses and knowledge do not always relate, "the finding of little or no relationship between knowledge, attitudes, and/or behavior should be read as there is little or no relationship between having a lot of esoteric knowledge about the topic and attitudes and

behavior” (Buller & Borland, 1998, p.451). Although the analysis of participant characteristics with attitudes, knowledge, behavior, and beliefs failed to be statistically significant, the results of this project indicate that short-term pretest-posttest interventions have a positive effect on attitude, knowledge, awareness, and behavior. In addition, society-wide campaigns can improve sun safety for children as indicated by the Australian data (Buller & Borland, 1998).

Limitations

One of the major limitations of this study was the small sample size (N=22). As a result the strength of association of some of the findings were not statistically significant at alpha level of 0.10. It is well known that clinical staff have time constraints, this may have played a role in the low number of participants in this study. The staff may have been at their maximum work schedules and may not have had the time available to conduct a study, resulting in a small sample size (N=51) at baseline. More than one half of the original participants were lost to the American Cancer Society (ACS) telephone follow-up resulting in a smaller sample (N=22) after the intervention. This was due to participants who asked not to be called back, relocated or changed their telephone numbers, used caller identification rejection, did not answer their telephone, and refused to take part after being contacted.

This pilot project was conducted using the Cook Children’s Physician network pediatric clinics chosen by a clinical operations manager for that facility. It is likely that some personal bias existed in the choices of clinics used to conduct this study. The

participant population was skewed to Caucasians, with a large percentage reporting higher than average levels of education and income.

Although quite common in the skin cancer prevention literature, the use of self-reported measures is a limitation because this is a measure of social and behavioral factors, which are not always reliable measures (Glanz et al., 1999).

In the Institutional Review Board proposal it was indicated that the Slip! Slop! Slap! video would be played while participants sat in the clinic's waiting room. At completion of the study it was obvious that the viewing of this video prior to the intervention was an error, because the information contained in the videotaped message was a part of the intervention, and should not have been viewed prior to the participants answering the questionnaire. However, only two of the respondents recalled seeing the sun protection video on the post-test and they reported not seeing it on the pre-test.

Recommendations

The focus of this pilot project was to increase knowledge and awareness of parents of six-month old infants. Skin cancer education, prevention and early detection are key factors for the reduction in the rates of all types of skin cancers in the future. Parents, guardians, and caregivers should be targeted and educated about sun protection for their children as early as six-months of age to reduce the risk of sun overexposure. Childhood protection from UVR is most effective when it begins early (Gilchrest, et al., 1999), thus parental modeling would be beneficial for preventive behaviors resulting in skin cancer reduction. According to Loescher, et al., (1995) children are the prime

targets for skin cancer education and prevention. However, it is unclear whether structured interventions or combination approaches involving parents is the best way to teach children prevention.

Strategies for prevention are very important and should include a reduction in sun exposure. But according to Robinson et al., (1997) in itself prevention knowledge has limited effects on changing behavior. Although parental knowledge may not translate into desirable practice, parents as role models can ensure that an adequate supply of sunscreen and protective clothing are available to their children (Robinson, Rademaker, Sylvester, & Cook, 1997). In addition the use of sunscreens has increasing importance and should be encouraged by health care providers (Nicol & Schlepp, 1999). All sun protective measures, especially the use of sunscreens and protective clothing should become a routine part of everyone's day. However, Fusaro (2000) indicate that insufficient and inappropriate sunscreen use is only a minor part of the public health problem. Education and prevention programs in Texas, and throughout the U.S. should mirror the highly successful Australian programs conducted over the past 20 years. As recommended by Dietrich, Olson, Sox, Stevens, Tosteson, Ahles, Winchell, Grant-Peterson, Collison, and Sanson-Fisher (1998), pediatricians should consider incorporating and promoting such sun awareness programs in their practices.

The findings of this pilot project are promising and suggest an important start in alerting parents and caregivers of the need to protect themselves and their children against the sun's harmful effects. In addition the findings may be a useful guide in assisting the ACS skin cancer project staff in planning future community interventions.

APPENDIX A
PRE-EVALUATION QUESTIONNAIRE

Appendix A

Pre-evaluation Questionnaire

This questionnaire is to find out how much you know about the sun's effects, and what you are currently doing to protect yourself and your children from sun damage to the skin.

WE WOULD LIKE TO BEGIN BY ASKING A FEW QUESTIONS ABOUT YOU AND YOUR HOUSEHOLD.

1. Person answering these questions: **Circle one** Mom Dad Other
(specify) _____
2. Are you: **Circle one** Married Divorced Separated Widowed
3. What is your age range? **Circle one** (<20) (20 – 30) (31 – 40) (41 – 50)
(51 – 60) (>60)
4. What is your ethnic background or race? **Circle one**
 - 1- White, non Hispanic
 - 2- Black, non-Hispanic
 - 3- Hispanic
 - 4- Asian
 - 5- Native American
 - 6- Other (specify) _____
5. Education: **Check the highest grade that you have completed**
____ Did not complete High School
____ Completed High School
____ Completed some College
____ Completed College 2yr or 4 yr (**circle one**)
____ Completed Graduate School
____ Professional School
____ Other (specify) _____
6. Income: **check one**

____ < \$10,000	____ \$51,000 - \$65,000
____ \$10,000 - \$20,000	____ \$66,000 - \$85,000
____ \$21,000 - \$30,000	____ \$86,000 - \$100,000
____ \$31,000 - \$40,000	____ \$101,000 - \$120,000
____ \$41,000 - \$50,000	____ >\$120,000

Please turn over to complete this questionnaire...

**NOW WE WOULD LIKE TO ASK YOU QUESTIONS ABOUT THE SUN AND YOUR
SUN HABITS.**

7. How many children live in your home? **Circle one** 1 2 3 4 5 6 7 8 9
What are their ages? **List all ages** ____, ____, ____, ____, ____, ____, ____
8. Which of the following **best** describes your skin type? **Check one only**
☐ Fair, always burns, never tans, (Celtic, Irish)
☐ Fair, easily burns, minimally tans (Caucasian)
☐ Sometimes burns, gradually tans (dark Caucasian)
☐ Minimally burns, always tans (Mediterranean, Asian, Hispanic)
☐ Rarely burns, always tans (American Indian, Med-Eastern, Hispanic)
☐ Rarely burns, always tans (Black, American or other origin)
9. Do you enjoy being out in the sun? **Circle one** Yes No
 Do you use a tanning salon? **Circle one** Yes No
 Are tans ever healthy? **Circle one** Yes No
 Is being out in the sun healthy? **Circle one** Yes No
 Do you use sunscreen/sunblock on cloudy o& overcast days? **Circle one** Yes No
 Have you ever heard of SPF (sin protection factor)? **Circle one** Yes No
10. The sun: **You may check more than one**
☐ makes vitamins ☐ causes skin cancer
☐ makes me feel good ☐ causes cataracts (eyes)
☐ makes me feel good ☐ causes sunburn
☐ clears up my skin ☐ causes wrinkling
11. When you are out in the sun, do you **Check all that apply to you**
☐ apply sunscreen at least 30 minutes before going outdoors
☐ wear sunscreen/sunblock
☐ wear a wide-brimmed hat
☐ seek shade when possible
☐ wear sunglasses with sun protection
☐ reapply sunscreen every 2 hours
☐ stay out of the midday sun (10 a.m. – 4 p.m.)
☐ use an umbrella
☐ wear long sleeve shirt, long pants, or long skirt

12. Do you encourage your children to **Check all that apply**
- ☐ apply sunscreen at least 30 minutes before going outdoors
 - ☐ wear sunscreen/sunblock
 - ☐ wear a wide-brimmed hat
 - ☐ seek shade when possible
 - ☐ wear sunglasses with sun protection
 - ☐ reapply sunscreen every 2 hours
 - ☐ stay out of the midday sun (10 a.m. – 4 p.m.)
 - ☐ use an umbrella
 - ☐ wear long sleeve shirt, long pants, or long skirt

13. Which areas should be protected from the sun?

You may check more than one

- | | |
|-----------------------------------|------------------------------------|
| <input type="checkbox"/> eye lids | <input type="checkbox"/> nose |
| <input type="checkbox"/> ears | <input type="checkbox"/> neck |
| <input type="checkbox"/> cheeks | <input type="checkbox"/> shoulders |
| <input type="checkbox"/> scalp | <input type="checkbox"/> lips |
| <input type="checkbox"/> hands | <input type="checkbox"/> feet |

14. Do you recall seeing a video about sun protection while in the waiting room?
- Circle one** Yes No

Thank you very much for taking the time to answer these questions.

APPENDIX B

POST-EVALUATION QUESTIONNAIRE

Appendix B

Post-evaluation Questionnaire

This questionnaire is to find out what you have been doing over the **past six months** to protect yourself and your children from the sun and it's harmful effects.

WE WOULD LIKE TO BEGIN BY ASKING A FEW QUESTIONS ABOUT YOU AND YOUR HOUSEHOLD.

1. Person answering these questions: **Circle one** Mom Dad Other
(specify) _____
2. Are you: **Circle one** Married Divorced Separated Widowed
3. What is your age range? **Circle one** (<20) (20 – 30) (31 – 40) (41 – 50)
(51 – 60) (>60)
4. What is your ethnic background or race? **Circle one**
7- White, non Hispanic
8- Black, non-Hispanic
9- Hispanic
10- Asian
11- Native American
12- Other (specify) _____
5. Education: **Check the highest grade that you have completed**
____ Did not complete High School
____ Completed High School
____ Completed some College
____ Completed College 2yr or 4 yr (**circle one**)
____ Completed Graduate School
____ Professional School
____ Other (specify) _____
6. Income: **check one**
____ < \$10,000
____ \$10,000 - \$20,000
____ \$21,000 - \$30,000
____ \$31,000 - \$40,000
____ \$41,000 - \$50,000
____ \$51,000 - \$65,000
____ \$66,000 - \$85,000
____ \$86,000 - \$100,000
____ \$101,000 - \$120,000
____ >\$120,000

Please turn over to complete this questionnaire...

**NOW WE WOULD LIKE TO ASK YOU QUESTIONS ABOUT THE SUN AND YOUR
SUN HABITS OVER THE PAST SIX MONTHS.**

7. How many children live in your home? **Circle one** 1 2 3 4 5 6 7 8 9
What are their ages? **List all ages** ____, ____, ____, ____, ____, ____, ____
8. Which of the following **best** describes your skin type? **Check one only**
☐ Fair, always burns, never tans, (Celtic, Irish)
☐ Fair, easily burns, minimally tans (Caucasian)
☐ Sometimes burns, gradually tans (dark Caucasian)
☐ Minimally burns, always tans (Mediterranean, Asian, Hispanic)
☐ Rarely burns, always tans (American Indian, Med-Eastern, Hispanic)
☐ Rarely burns, always tans (Black, American or other origin)
9. Do you enjoy being out in the sun? **Circle one** Yes No
 Do you use a tanning salon? **Circle one** Yes No
 Are tans ever healthy? **Circle one** Yes No
 Is being out in the sun healthy? **Circle one** Yes No
 Do you use sunscreen/sunblock on cloudy o& overcast days? **Circle one** Yes No
 Have you ever heard of SPF (sin protection factor)? **Circle one** Yes No
10. The sun: **You may check more than one**
☐ makes vitamins ☐ causes skin cancer
☐ makes me feel good ☐ causes cataracts (eyes)
☐ makes me feel good ☐ causes sunburn
☐ clears up my skin ☐ causes wrinkling
11. Over the **past six months** when you are out in the sun, did you
Check all that apply to you
☐ apply sunscreen at least 30 minutes before going outdoors
☐ wear sunscreen/sunblock
☐ wear a wide-brimmed hat
☐ seek shade when possible
☐ wear sunglasses with sun protection
☐ reapply sunscreen every 2 hours
☐ stay out of the midday sun (10 a.m. – 4 p.m.)
☐ use an umbrella
☐ wear long sleeve shirt, long pants, or long skirt

12. Over the **past six months** did you encourage your children to

Check all that apply

- ☐ apply sunscreen at least 30 minutes before going outdoors
- ☐ wear sunscreen/sunblock
- ☐ wear a wide-brimmed hat
- ☐ seek shade when possible
- ☐ wear sunglasses with sun protection
- ☐ reapply sunscreen every 2 hours
- ☐ stay out of the midday sun (10 a.m. – 4 p.m.)
- ☐ use an umbrella
- ☐ wear long sleeve shirt, long pants, or long skirt

13. Over the **past six months** what areas of the body did you protect from the sun?

You may check more than one

- | | |
|-----------------------------------|------------------------------------|
| <input type="checkbox"/> eye lids | <input type="checkbox"/> nose |
| <input type="checkbox"/> ears | <input type="checkbox"/> neck |
| <input type="checkbox"/> cheeks | <input type="checkbox"/> shoulders |
| <input type="checkbox"/> scalp | <input type="checkbox"/> lips |
| <input type="checkbox"/> hands | <input type="checkbox"/> feet |

14. Do you recall seeing a video about sun protection while in the waiting room?

Circle one Yes No

Thank you very much for taking the time to answer these questions.

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