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Service Distinction Track

Capstone Project Proposal

I. Mission Statement

Increase adolescent awareness and knowledge regarding skin cancer and sun exposure in rural junior high classrooms across the state of Iowa by creating an interactive multi-media resource for teachers and medical students to use with outcomes measured via pre- and post-quizzes and a one-month post intervention survey measuring preventative attitudes and behavioral intentions.

II. How you decided on the Project

When I was an adolescent, I hardly ever wore sun screen, frequently burned, tanned with tanning beds for prom, and I did not think about the future consequences. When I was in college, my high school coach who also owned the tanning salon in our small rural town lost her battle to melanoma. She was only in her thirties and was a mother of two young boys. I was shocked. Shocked she was so young and shocked that a lesion on her skin took her life. This experience opened my eyes to the harmful effects of UV radiation.

Skin cancer is by far the most common of all cancers. About 70,230 new melanomas are estimated to be diagnosed in 2011. About 8,790 people are expected to lose their lives due to this malignant disease. The incidence of melanoma has been rising over the past 30 years. The lifetime risk of having melanoma is about 1 in 50 (2%) for whites, 1 in 200 (0.5%) for Hispanics, and 1 in 1,000 (0.1%) for blacks.[1] About 2.2 million basal and squamous cell cancers are diagnosed annually. It is estimated that approximately 2,000 people die each year from non-melanoma skin cancers.[2] With these growing statistics, skin cancer is a major health concern for our country.

High levels of ultraviolet (UV) radiation increase the risk of developing all three types of skin cancer. Intermittent intense UV exposure increases the risk specifically for melanoma and basal cell carcinoma. One or more sunburns during childhood are strongly associated with developing melanoma. However, chronic UV exposure increases the risk of squamous cell carcinoma.[3] Children and adolescents are at risk because they have the opportunity to spend more time in the sun. It is estimated that approximately 80% of a person's lifetime sun exposure and harmful damage happens before they are 18 years old. With protection of their skin from the sun, children and adolescents can limit their UV exposure and decrease their chances of developing skin cancer. Sun awareness education can help children and adolescents develop behavior patterns to keep their skin safe throughout their life.[4] Studies show that with sun education programs and encouragement from parents, primary school children protect their skin and have a positive attitude towards skin protection. With age, children lose their positive attitude and their protective behaviors decline leading to an increase in sunburns in adolescents. This is a critical time for an intervention. [5]

A previous study assumed that most adolescents are in either a precontemplation or contemplation stage of change in regards to sun protection. More cognitive preparation is necessary to move adolescents into an action stage. An intervention that increases awareness and knowledge regarding skin cancer and sun protection may help this transition. Also, many health behavior models state that perception of vulnerability is a major variable that influences

behavior. In this previous study, perceived susceptibility to skin cancer and skin damage was the strongest predictor of sun protection intentions and behaviors. Incorporating exercises designed to individualize perceptions of vulnerability may be helpful in motivating these adolescents. [6] A personal risk-assessment questionnaire during the intervention may help achieve this goal.

Appearance-based educational interventions are showing positive results of intention to change sun protection behavior, especially in college students. A recent study showed that this educational method was effective in adolescents too. Adolescents commonly hold beliefs of invulnerability which may lead to the attitude that skin cancer is only a problem for adults. Also, adolescents may believe that tanning is an appearance enhancer. The appearance-based educational intervention demonstrates the negative impact of the sun on the skin and emphasizes premature aging. This negative appearance of photoaging counteracts the positive beliefs of tanning. [7] Another study, showed the long-term effects of appearance-based education in college students. They showed a videotaped slide show that depicted photoaging with examples of wrinkles and age spots. This video impacted the students' sun protection behaviors. [8] Including a component of appearance-based education into a multi-media resource for junior high students may help motivate behavior change.

Detecting melanoma at an early stage is the most effective way to improve patient survival. A recent study shows that melanoma patients with lower socioeconomic statuses (SES) are associated with thicker Breslow depth melanomas and poorer prognosis compared to higher socioeconomic status patients.[9] Another study showed that even though Hispanics have a lower incidence of melanoma, they are more likely to have thicker tumors and poorer prognosis. It also showed that substantially greater proportions of thick melanomas were among the Hispanic men of lower SES.[10] These studies prove that there are racial/ethnic and socioeconomic disparities present in the management of melanoma. This may be due to less access to educational campaigns and screening examinations. Melanoma prevention campaigns should target patients of lower socioeconomic status and a diversity of races to reduce this disparity.

Rural and underserved individuals have less access to medical care, especially specialty care and this may delay their diagnosis of skin cancer and worsen their prognosis. A study showed that physician supply was a significant predictor of melanoma stage at diagnosis. Each additional dermatologist per 10,000 population was associated with 39% greater odds of an earlier diagnosis. This also applied to family physicians with the odds of early diagnosis increasing by 21% for each additional family physician per 10,000 population. [11] Also, studies show that the rural population practices less sun protection behaviors like wearing sunscreen. According to the 2005 Health Information National Trends Survey, rural residents compared to urban residents were 33% less likely, based on odds, to wear sunscreen when out in the sunlight for more than an hour. With a personal history of skin cancer, the rural and urban residents were both more likely to wear sunscreen. However unlike urban residents, a family history of skin cancer did not increase sunscreen use in rural residents.[12] With the decreased access to medical care and the decreased use of sunscreen by the rural population, they are at risk of developing skin cancer with poorer prognoses.

The use of indoor tanning beds is a risk factor for the development of all three types of skin cancer. Evidence shows that tanning bed exposure before 30 years increases the risk of

melanoma by 75%. Also, the International Agency for Research on Cancer has placed tanning beds in the highest category of carcinogens along with cigarettes.[13] Even though tanning beds are known carcinogens, adolescents across the country continue to use them. A study reported that 36.8% of white female adolescents and 11.2% of white male adolescents have used a tanning booth at least once in their lifetime. Adolescents in the Midwest and South were 2 to 3 times more likely to use indoor tanning booths than the rest of the country. Also, adolescents attending a rural high school were more likely to use tanning booths compared to urban high school students. [14] These statistics emphasize that rural Midwest adolescents are more likely to use indoor tanning booths which put them at risk of developing skin cancer. The Iowa Department of Public Health has over 1,170 tanning facilities registered in the state of Iowa. Unlike other states, Iowa does not have a ban preventing adolescents from using these facilities, and Iowa does not require parental permission for minors to tan.[15] With the large quantity of tanning facilities across the state of Iowa and no legislation preventing adolescents from occupying them, Iowa adolescents are at risk.

After speaking with my past junior high health teacher and another young science teacher, I developed the idea of implementing skin cancer education and sun exposure prevention into rural junior high classrooms across the state of Iowa. This age group would be at the critical time for an intervention and this rural population has high amounts of UV exposure with outdoor employment, recreation, and use of indoor tanning booths. I plan to create an interactive multi-media resource, teacher instructions, and student hand out for health or science teacher to use. The resource will include a personal risk-assessment, education about skin cancer and sun exposure prevention, and a component of appearance-based education. It will be targeted to a rural multi-cultural population with discussion of rural behavior patterns and the effects of sun on different skin types. I plan to personally present this resource in a couple rural school districts. I have already been approved by Belle Plaine's junior high science teacher and principal to present the resource in her classroom this spring. Then I plan to distribute the resource electronically to rural school districts across the state of Iowa for teachers to use. I also plan to share the resource with the medical student members of DIG (Dermatology Interest Group), so that they will be able to continue to present the resource in other rural school districts in future years.

III. Resources needed

Rural school districts and teachers interested in teaching skin cancer education and prevention that are willing to utilize my resource or have medical students come into their classroom. Medical student members of DIG will help with the sustainability of the project. They will have the resource and contacts available to continue to implement the resource into new rural school districts in future years.

IV. Timeline

I plan to develop the multi-media resource, teacher instructions, student handout, quizzes, and surveys throughout this fall and winter. I plan to have it completed and ready for review by early spring. I will have Dr. Liu, a dermatologist at the University of Iowa, and the Belle Plaine junior high science teacher review the resource and provide feedback before implementation. During my two week spring break vacation, I will be able to present the resource in Belle Plaine's junior

high science class and a couple more rural junior high classrooms across the state. This will allow me to directly see how the resource flows and how the students perceive it. If needed, I will make improvements in the resource and then distribute it electronically to rural school districts across the state of Iowa. I will also distribute the resource to DIG Leadership for future use.

V. Outcomes- Measurable Goals

My primary goal is to increase adolescent awareness and knowledge in rural junior high students regarding skin cancer and sun exposure. My secondary goal is to increase their preventative attitudes and motivate them to change their UV exposure behavioral intentions.

VI. Assessment/Evaluation methods

I will assess my primary goal by having the students complete pre- and post-quizzes about their awareness and knowledge on skin cancer and sun exposure. I will assess my secondary goal by surveying the students one month post-intervention to measure their preventative attitudes and UV exposure behavioral intentions.

Resources:

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14. C. Demko, E. Borawski, S. Debanne. Use of Indoor Tanning Facilities by White Adolescents in the United States. *Archives of Pediatrics & Adolescent Medicine* 2003; 157:854-860.
15. Tanning Facilities. Iowa Department of Public Health. http://www.idph.state.ia.us/IdphRadHealth/TanningFacilities.aspx