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Knowledge and Behavior Improvement Through a Skin Cancer Action Approach Exhibit

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Knowledge and Behavior Improvement Through a Skin Cancer Action Approach Exhibit

Abstract

The purpose of the project reported here was to reduce the risk of skin cancer through an educational exhibit. Educational exhibits including brochures, conversation with Extension agents, wide-brimmed hats, and sunscreen were used to educate agriculturalists. Pre- and post-surveys queried participants regarding sun habits, knowledge of risk factors, perceived risk, and history of skin cancer. The results showed an increased use of wide-brimmed hats ($p=0.00$), sun-protective clothing ($p=0.00$), and knowledge of skin cancer risk factors ($p=0.014$). A trend toward increasing sunscreen use and decreasing sole use of baseball caps was also seen.

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Introduction

Skin cancer (both melanoma and non-melanoma types) is now the most common form of cancer in the United States according to Harris and Alberts (2004). "Nearly one million new cases are reported each year, which is estimated to be one in six Americans who will develop skin cancer in their lifetime" (Diepgen, 2002). The risk of developing skin cancer is increased by exposure to excessive amounts of total time in the sun and from frequent or severe sunburns. The amount of time farmers and other agriculturalists spend outside increases their risk for skin cancer. Primary preventative measures include wearing protective clothing, using sunscreen with an appropriate sun protection factor, wearing a hat, and avoiding the sun by seeking shade (Stanton, 2004).

The purpose of the study reported here was to change sun exposure behaviors in agriculturalists through a skin cancer action approach exhibit. Educational conversations, skin cancer brochures, sunscreen, and wide-brimmed hats were provided at agriculture conferences (Farm Bureau, Cattlemen, Wool Growers, Grazing, and Extension Service). An improvement in sun safe behavior and a decrease in skin cancer were expected. The project design was patterned after similar hat trade programs from various Extension services, including Wisconsin, Iowa, Minnesota, and Indiana (Burwell, 2004).

Objectives/Purpose

The purposes of the study were to:

1. Decrease unprotected UV exposure by increasing use of wide-brimmed hats, protective clothing, and sunscreen.
2. Increase knowledge of skin cancer risks through action learning techniques.
3. Determine related factors associated with safe sun behaviors as assessed from a self reported questionnaire.

Methods

Subjects

Participants attending agricultural conferences were recruited to participate in the study. The incentives of a tightly woven wide-brimmed hat, sunscreen with a SPF rating of 15 or higher, and educational materials were presented in an exhibit style at the Utah Grazing Conference, Utah Farm Bureau Conference, Utah Cattlemen and Wool Growers meetings, Utah Farmers Union, and various county Extension programs.

Demographic analysis showed 56.1% of the participants were male and 43.9% female. Four percent were under age 20; 20.4% age 21-35; 25.4% age 36-50; 38% age 51-65; and 11.9% age 66 and above. The majority of subjects, 56.1%, were from rural areas, 29.4% from suburban areas, and 14.5% from urban areas.

Funding Support

Utah State University Extension awarded a \$10,600 competitive grant to the Trade your Hat--Sun and Skin Cancer Team for a skin cancer awareness exhibit and hat exchange for a 2-year period. The funds were used to create a Trade Your Hat exhibit, purchase sun-safe hats, and create a skin cancer survey. In addition, the Utah State Health Department donated sunscreen samples and skin cancer awareness and prevention brochures.

Design

The Trade Your Hat program was designed to educate participants in an exhibit style format using written materials, brief conversation with Extension personnel, and action learning. The use of written materials and narrative approaches, such as conversations, has been shown to improve health related behaviors (Udermann, 2004; Slater, 2003). Action learning, developed in the 1940's, helps "real people resolv[e] and tak[e] action on real problems in real time and learn while doing so" (Marquardt, 2004). The components of action learning include:

- A problem, project, or challenge;
- Questioning and reflection about the problem;
- Taking action on the problem; and
- Committing to change.

The Trade Your Hat program used action learning to address the **problem** of skin cancer in agriculturalists. The exhibit based learning provided the opportunity for participants to **question and reflect** on skin cancer through discussion with Extension agents and reading brochures. Distribution of wide-brimmed hats and sunscreen with a rating of SPF 15 or higher allowed the participants to take **action** in preventing skin cancer. Use of pre and post surveys encouraged **commitment** to change behaviors over time.

Participants were asked to trade in their "unsafe" hat (such as a baseball cap) that did not protect the ears or neck and fill out a pre-survey in exchange for a wide-brimmed hat, sunscreen, and educational brochure. A total of 720 hats, sunscreen, and brochures were distributed. After 250 pre-surveys were distributed, the hats, sunscreen, and educational materials were given without requiring a survey to be completed.

The surveys contained five questions asking about personal sun behaviors and three questions regarding personal skin cancer health history. The participants were also asked to identify whether twelve genetic or behavior factors would place a person at high risk for skin cancer. This question was scored as a knowledge test. Participants were then asked for a self-report of which of the twelve factors characterized them personally. Demographic questions regarding age, gender, occupation, and type of residence (urban, suburban, or rural) were also asked.

Participants completed pre-surveys at the Trade Your Hat exhibits. Post surveys, with the same questions, were mailed 3 months later.

- 250 pre-surveys were completed.
- 221 pre-surveys had complete address information to send post-surveys.
- 145 post-surveys were returned, for a 65% return rate.

The pre- and post-surveys were approved through the Utah State University Institutional Review Board (IRB) process, and participants were required to sign a consent form.

Data Analysis

Paired t-tests were calculated for pre- to post-surveys. Questions on knowledge of skin cancer risk factors and actual sun behaviors were analyzed. Behavior questions were based on a Likert scale of 1-5 (1 being never practice this behavior and 5 being daily practice of behavior). Correlations were calculated between the amount of time spent in the sun and wearing a wide-brimmed hat, a baseball cap, sunglasses, sun-protective clothing, and using sunscreen with a SPF rating of 15 or higher when outside. In addition, the perceived risk of developing skin cancer was correlated to the same variables.

Results

Sun Exposure Practices Prior to Exhibit

Many participants, 46.9%, had long-term daily exposure to the sun between 10 a.m. and 3 p.m., as was to be expected with agriculturalists. Time spent outdoors was significantly correlated to the self-reported prevalence of skin cancer and precancerous lesions ($r=-0.178$, $p=0.008$). Use of SPF 15 sunscreen was significantly correlated with use of wide-brimmed hats ($r=0.168$, $p=0.012$), baseball caps ($r=-0.195$, $p=0.004$), and sunglasses ($r=0.167$, $p=0.012$).

Prior to the exhibit the percentage of participants reporting behaviors showed:

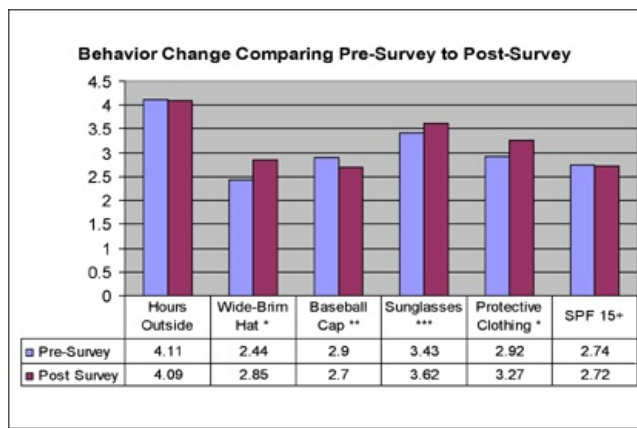
- 33.2% never wore a wide-brimmed hat outside,
- 27.4% rarely wore a wide-brimmed hat outside,
- 23.6% wore baseball caps daily,
- 32.7% wore sunglasses daily,
- 13.4% used sunscreen with a rating of SPF 15 or higher daily,
- 16.4% used SPF 15 sunscreen often, and
- 70.2% rarely or never used SPF 15 sunscreen.

The participants with a self-perceived risk for skin cancer portrayed better sun-safe behaviors. Perceived risk for skin cancer was significantly correlated with use of SPF 15 sunscreen ($r=-0.293$, $p=0.000$), frequency of regular checkups for skin cancer ($r=0.260$, $p=0.000$), and an overall lower prevalence of skin cancer or precancerous lesions ($r=0.256$, $p=0.000$).

Behavior Changes Post Exhibit

Paired t-tests were used to compare subjects' behavior at the time of the pre- and post-surveys to determine if education would change behavior. The behaviors examined were time spent outdoors, use of wide-brimmed hats, baseball caps, sunglasses, protective clothing, and sunscreen. The use of a full wide-brimmed hat ($p=0.000$) and use of protective clothing (tight weave fabrics, long-sleeved shirts, pants, etc.) when outside ($p=0.000$) significantly increased. There was a trend toward decreasing the use of baseball caps ($p=0.054$). The frequency of sunscreen use did not increase. (Figure 1 shows participants' behavior at the time of the pre-survey and at the time of the post-survey using paired samples.)

Figure 1.
Participants' Behaviors at Time of Pre- and Post-Surveys



Likert scale , 1 = never, 5 = daily. *significant at p = 0.000, ** p=0.054, ***p=0.069

Correlation studies were done to further compare behavior. Use of SPF 15 sunscreen at the time of the pre-survey was correlated to lack of skin cancer lesions at ($r=-0.137$, $p=0.042$), and perceived risk for skin cancer ($r=-0.293$, $p=0.000$). The use of protective clothing when outside was also significantly correlated ($r=-0.293$, $p=0.008$) with lack of skin cancer or precancerous lesions.

Knowledge Changes Post Exhibit

Knowledge scores were correlated with factors placing a person at risk for skin cancer. Paired t tests were used to compare the pre- and post-skin cancer knowledge of subjects. Overall knowledge of risk factors significantly improved from 8.7 ± 2.04 to 9.1 ± 1.82 ($p=.014$) from a total possible correct of 12. Specific knowledge changes are listed in Table 1. There was not a significant difference in survey results for geographic residence (rural vs. urban), gender, or age.

Table 1.
Change in Knowledge. Percentage of Correct Answers for Identifying Skin Cancer Risk Factors

Risk Factors for Skin Cancer	Pre Survey % correct answers	Post Survey % correct answers	P value
Light hair color	73.5	84.8	0.013
Blue, green or gray eyes	59.7	71.0	0.058
Fair complexion or freckles	81.4	91.7	0.005
Family history or melanoma	76.1	87.6	0.000
Many moles or changing moles	68.1	79.3	0.002
Repeated sunburns before age 15	71.2	82.8	0.023
Constant exposure to the sun	81.9	89.7	0.131
Use of tanning bed	61.9	80.0	0.000

Discussion

Summary

Approximately 80% of skin cancers occur in locations on the body frequently exposed to the sun (Diepgen, 2002). Harris (2004) stated that limiting unprotected UV exposure is the primary preventative measure for skin cancer. Exhibit style programs using brochures, brief conversations, and action learning can be effective in limiting unprotected UV exposure.

The results of the study reported here were consistent with a similar study done by Stanton, Janda, Baade, and Anderson (2004), which also found a positive correlation between perceived risk of skin cancer and improvement in certain sun-safe behaviors. Participants who viewed themselves at high risk for skin cancer showed better sun-safe behaviors, such as sunscreen use and regular medical checkups.

Improvement in knowledge regarding risk for skin cancer and many sun exposure practices were the result of the study. Behaviors that showed significant improvement were an increased use of a full wide-brimmed hat, protective clothing, and sunglasses. There was a trend toward decreasing the sole use of baseball caps. There was no significant change in time involved in outdoor activities/work, yet this was expected as we were targeting agriculturalists that are required to be outside.

Limitations

Increased use of a wide-brimmed hat, for participants, was probably due in large part to the provision of the hat (the swapping of an unsafe hat for a safe one) at the exhibit. The authors recognize that funding for hats may not be possible in all community programs.

Conclusions

Community based skin cancer awareness programs, presented by Extension Services, can improve sun exposure behaviors and overall knowledge of skin cancer risk factors. Possible Extension programs could include:

- Sun safe brochures or handouts provided at livestock, grazing, 4-H, or other meetings,
- Articles in Extension newsletters providing information on sun safe behaviors such as wearing wide-brimmed hats, sunscreen, and long-sleeved shirts, and
- Application for grants or solicitation of donors to provide wide-brimmed hats for a Trade Your Hat event.

Our results showed an increased use of wide-brimmed hats and protective clothing after participating in an educational skin-cancer exhibit. Educating the public on risk factors for skin cancer and sun-safe behaviors can decrease the risk and prevalence of skin cancer.

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