Adapting SunSafe: A Skin Cancer Prevention Intervention for Use with Multiethnic Adolescents

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Adapting SunSafe:
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Background

Skin cancer is the most preventable type of cancer, but:
• 3 million cases each year in the US - (40,000 melanoma) (NCI, 2012)
• 7,000 cases in HI - (300 melanoma) (NCI, 2010)
• Half of people who live to age 65 will be diagnosed with skin cancer (NCI, 2012)
• Annual costs to treat melanoma is $14,000 - total costs 2.4 billion dollars per year in the US (Guy, Ekwueme, Tangka, Richardson, 2012)

Two major categories: non-melanoma and melanoma
• Non melanoma presents lower risks of death, but high personal morbidity risks
• Melanomas account for 75% of skin cancer deaths w/ increasing trends in HI (NCI, 2012)

Caused by cumulative exposure to UV radiation
• Melanoma are the most frequently diagnosed cancer in young people ages 14-20 (Weir, et, al., 2011)
• Melanoma risks are common regardless of skin complexion (Eakin, et al., 2004)
• Multiethnic individuals whose skin is pigmented underestimate their risk (Cokkindes, 2006)
• Highest risks are in childhood/adolescents - reducing exposures can reduce risks by 50 -80% (Stern, Weinstein, Baker, 1986; Giles-Corti, et al., 2004)
• Children in Hawaii are among those at greatest risk in the US. (Eakin, et al., 2004)
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Background

Structural components place children at high risks in school in HI (Eakin, et al., 2004)

Schools are built with features to facilitate natural structural cooling.

Students are exposed to direct sunlight while:

- walking between class;
- during physical education;
- athletic activities;
- during recesses; and
- during lunch periods

Parents are not aware of children's risks while at school (Eakin, et al., 2004)
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**Background**

**Educators are receptive to sun protection measures in school**

**In the US:**

3.4% of schools have sun protection policies. (Buller, Buller, & Reynolds, 2006)

84% of students were outdoors during peak UV periods (Buller, Buller, & Reynolds, 2006)

72% of administrators willing to adopt sun exposure mitigation policies. (Buller, Buller, & Reynolds, 2006)

**In HI:**

99% of students were outdoors during peak UV periods (Eakin, et al., 2004)

78% of administrators willing to adopt sun exposure mitigation policies; (Eakin, et al., 2004)

35% of administrators were in favor of a statewide policy to prevent skin cancer (Eakin, et al., 2004)
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Olsen, Gaffney, Starr, Gibson et al. 2007.
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Background

Piloted tested SunSafe in 2000 at Iolani School
- Collaboration with HI Skin Coalition
- UH Medical Students provided training in grades K through 6 science classes

Catalyzed changes in:
- Student knowledge and behaviors – followed in science classes and sun protection fair
- Parental support – for the adopted policy changes in school
- Policy changes – UV shirt and hats required and shelter structures built

(Cassel, 2011)
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Aims

Adapt program to address a young adult population
- Appearance issues
- Emergent consumers

Build-in features to suit local audiences
- Year round outdoor activity
- Water sport activity

Build-in a portable delivery model
- Broader dissemination
- Initiate policy changes

Determine the initial effectiveness of the pilot intervention
- Pre /post test design
  - Use of standardized self reported core survey items to assess intended behaviors, knowledge attitudes (Glanz, 2008)
  - Test use of objective measures to assess changes in students sun protection behaviors
- Process evaluation with teachers
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Methods

Qualitative / CBPR

• Discussion groups held with 50 high school students
  – Informed creation materials used
  – Led by undergraduate students

• Interviews held with teachers and Principal

Quantitative

Pre / post design

• Sun Habits Survey (Glanz, 2010)
• Systematic Observation of Sun Protection Factors Scale (SOSPS) (Maddock, 2007)
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Qualitative Themes Informing the Intervention

- Skin appearance, e.g. cleanliness is a sign of good health
- Skin cancers thought to occur later in life no risk for young people
- Unaware of UVR connection to skin cancer
- Unaware of treatment (excisional) required for skin cancers
- Athletes had some knowledge of sun protection
- Sunscreens seen as greasy, sticky not worth the effort
- After becoming knowledgeable more resolute towards protective behaviors
- Girls likely to use portable barrier protection and shade
- Reminder cues are important aspect of sun protection behaviors
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Methods

Adapted Intervention Components

Educator Overview Presentation
• Provide background on project, and the risks associated with sun-exposures in school
• Review project components, benefits to school, incentives and the reciprocity agreement

Classroom Session
• Delivered one hour educational presentation and conducted student activity with 10th grade students
• Students received educational materials, “goody bags” and resources for parent including invitation
• Pre post test given to students after session, another post test given to a subset after 12 months

Teacher/ Community/ Parent Session
• Provided light refreshments
• Provided background on project, and the risks associated with sun-exposures in school
• Provide informal fashion show presentation of XCEL UV line
• Provided skin cancer screening by local dermatologists

Field Assessments Using Systematic Observation of Sun Protection Factors
• Conducted by medical students prior to and 12 months post classroom intervention
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Methods

Intervention Materials

[Diagram of Love Your Skin project with information on sun safety and skin cancer prevention]
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Methods

• Recruited 208 multiethnic 10th grade students
  – 51.6% Asian (Japanese, Korean, Chinese, Filipino)
  – 30.4% Native Hawaiian, Pacific Islander (Marshallese, Samoan, Chuukese)
  – 8.4% White
  – 3.5% Hispanic
  – 2.7% Black

• Obtained parental consent and student assents

• Knowledge, attitudes, and intended behaviors assessed using an 18-item survey
  – 8 UVR protection knowledge items
  – 3 sun protection attitude items
  – 7 items on intended behaviors
  – demographic information

• Trained medical students on use of Systematic Observation of Sun Protection Factors (SOSPF)
  – assessed student sun protection behaviors during classroom breaks prior and 12 months after delivery of in-class sessions
# Adapting SunSafe: Aiea High School’s “Love Your Skin Project”

## Results

Changes in Pretest / Posttest Responses (n=208)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Percent Correct / Positive</th>
<th>12-month follow-up (n=42)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest (n=208) (answer)</td>
<td>Posttest (n=208)</td>
</tr>
<tr>
<td>1. To work best, sunscreen needs a half hour to be absorbed by the skin.</td>
<td>66% (true)</td>
<td>78%</td>
</tr>
<tr>
<td>2. You don't need to worry about skin cancer if you only go out for 10 to 20 minutes.</td>
<td>84% (false)</td>
<td>84%</td>
</tr>
<tr>
<td>3. People should use sunblock with a sun protection factor (SPF) rating of 30 or greater.</td>
<td>61% (true)</td>
<td>61%</td>
</tr>
<tr>
<td>4. People with light hair and light skin have the greatest skin cancer risk.</td>
<td>59% (true)</td>
<td>79%</td>
</tr>
<tr>
<td>5. Sunburn is painful but not really harmful in the long run.</td>
<td>77% (false)</td>
<td>84%</td>
</tr>
<tr>
<td>6. People who only go out in the sun for two weeks a year are not likely to get skin cancer.</td>
<td>59% (false)</td>
<td>72%</td>
</tr>
<tr>
<td>7. Being in water provides natural sun protection.</td>
<td>78% (false)</td>
<td>89%</td>
</tr>
<tr>
<td>8. Sun exposure during childhood can increase a person's chance of getting skin cancer.</td>
<td>86% (true)</td>
<td>96%</td>
</tr>
<tr>
<td>9. People are more attractive if they have a tan.</td>
<td>24% (disagree)</td>
<td>30%</td>
</tr>
<tr>
<td>10. It is too much bother to put on a hat when I go outside.</td>
<td>45% (disagree)</td>
<td>61%</td>
</tr>
<tr>
<td>11. I find it difficult to protect myself from the sun.</td>
<td>45% (disagree)</td>
<td>57%</td>
</tr>
<tr>
<td>12. It helps to wear a shirt with sleeves.</td>
<td>67% (agree)</td>
<td>83%</td>
</tr>
<tr>
<td>13. It helps to have a good base suntan.</td>
<td>24% (disagree)</td>
<td>28%</td>
</tr>
<tr>
<td>14. It helps to stay in the shade or under an umbrella</td>
<td>77% (agree)</td>
<td>87%</td>
</tr>
<tr>
<td>15. It helps to use sunscreen.</td>
<td>77% (agree)</td>
<td>91%</td>
</tr>
<tr>
<td>16. It helps to wear a hat.</td>
<td>68% (agree)</td>
<td>86%</td>
</tr>
<tr>
<td>17. It helps to limit the number of hours outdoors from 10 am to 4 pm.</td>
<td>73% (agree)</td>
<td>86%</td>
</tr>
<tr>
<td>18. It helps to wear sunglasses.</td>
<td>57% (agree)</td>
<td>82%</td>
</tr>
</tbody>
</table>
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## Results

### Changes in Observed Sun Protection Behaviors

Using the Systematic Observation of Sun Protection Factors

<table>
<thead>
<tr>
<th>Category</th>
<th>Observation Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (n) % (total n=168)</td>
</tr>
<tr>
<td><strong>Skin Complexion</strong></td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>(18) 10.7</td>
</tr>
<tr>
<td>Medium</td>
<td>(125) 74.4</td>
</tr>
<tr>
<td>Dark</td>
<td>(25) 14.8</td>
</tr>
<tr>
<td><strong>Hat Use</strong></td>
<td></td>
</tr>
<tr>
<td>Baseball front</td>
<td>(11) 6.5</td>
</tr>
<tr>
<td>Baseball rear</td>
<td>(9) 5.3</td>
</tr>
<tr>
<td>Other hat type</td>
<td>(1) 0.6</td>
</tr>
<tr>
<td>Total use</td>
<td>(21) 12.5</td>
</tr>
<tr>
<td><strong>Sunglasses</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>(7) 4.1</td>
</tr>
<tr>
<td>No / Cannot tell</td>
<td>(161) 95.9</td>
</tr>
<tr>
<td><strong>Shirt / Tops</strong></td>
<td></td>
</tr>
<tr>
<td>Tank top</td>
<td>(23) 13.6</td>
</tr>
<tr>
<td>Short</td>
<td>(117) 69.6</td>
</tr>
<tr>
<td>¾ sleeves</td>
<td>(9) 5.3</td>
</tr>
<tr>
<td>Long sleeves</td>
<td>(17) 10.1</td>
</tr>
<tr>
<td><strong>Pants / Bottoms</strong></td>
<td></td>
</tr>
<tr>
<td>¼ or less</td>
<td>(36) 21.4</td>
</tr>
<tr>
<td>½ Knee length</td>
<td>(66) 39.2</td>
</tr>
<tr>
<td>¾ Mid-calf</td>
<td>(8) 4.7</td>
</tr>
<tr>
<td>Full length</td>
<td>(57) 33.9</td>
</tr>
<tr>
<td><strong>Shade</strong></td>
<td></td>
</tr>
<tr>
<td>Portable</td>
<td>(0) 0.0</td>
</tr>
<tr>
<td>Environmental</td>
<td>(114) 67.8</td>
</tr>
<tr>
<td>None / No tell</td>
<td>(54) 32.2</td>
</tr>
</tbody>
</table>
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Discussion

• Student engagement to adapt program helped create buy-in among students
• Delivery in school setting expedited by use of teachers as key-informants
• Assessment of knowledge, attitudes and behaviors before and after delivery indicated positive changes on most items

• **Lack of Improvement on sunburn severity question, and two questions regarding tanning**
  • Use of testimonials from peers, celebrities and athletes to improve knowledge
  • Tanning questions possibly confounded by lack of negative connotations surrounding tanned skin.
  • Biases by students’ positive self perceptions regarding own skin tone

• **Able to test feasibility of an objective measure of sun protection behaviors**
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Aiea High School’s “Love Your Skin Project”

Implications

• Supports the development of a low-cost sun protection program for Hawaii and US high schools

• Potential to reduce skin cancer rates

• May help inform sun protection interventions in populations that underestimate their skin cancer risks (Chuang, 1995)

Future Research

• Develop and implement a randomized control trial

• Identify the key components of the intervention

• Explore effects of anti-tanning messages in multiethnic populations
Thanks to the Team

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References

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