

# Medical Students Educating Orange County, CA Teens About Sun Protection And Skin Cancer: What have we learned?

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## Background

- The Joel Myres Melanoma Awareness Project taught ~5,000 teens in Orange County during 2004-2005, and outreach is expanding rapidly.
- We're sharing all of our materials with other medical students through the National Melanoma Awareness Project.

## Objectives

- To evaluate knowledge, attitudes, and habits of Orange County, CA teens regarding sun safety and skin cancer
- To assess immediate and lasting impacts of a 50-minute classroom curriculum addressing these topics.

## Methods

### Subjects

- Protocol and all materials were approved by the UC Irvine IRB
- 1,240 students from 5 Orange County, CA middle and high schools (grades 6-12) participated
- Students were educated by medical students using a one-time 50-minute curriculum
- Students completed surveys in their classrooms:
  - immediately before education (42 questions)
  - immediately after education (27 questions)
  - three months following education (45 questions)

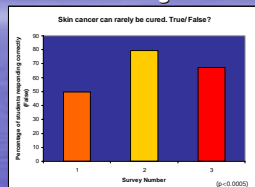
### Data Analysis

- Tests included ANOVA, students' t-test, and Pearson chi-square test. Significance at  $p < 0.05$ .
- Specific indices ("Summary Scores") pooled responses to related questions:
  - Risk Factors (6 questions)
  - Knowledge (11 questions)
  - Attitudes (4 questions)
  - General Sun-Safety Habits (8 questions)
  - Sunscreen Usage (7 questions)

Survey	1	2	3
n	1182	1247	698
% Female	48.9	49.6	53
Average Risk Factor Score†	9.66	9.50	9.74
Grades 6-8 (%)*	70.5	71.6	87.4
Grades 9-12 (%)*	29.6	28.4	12.6

(Above right): Sample distribution. † Risk factor scores incorporate natural hair color, natural eye color, approximate number of moles, skin type/tendency to burn, approximate number of previous severe blistering sunburns. No significant differences across surveys in any one factor, nor in average scores, nor in distribution of scores ( $p < 0.989$ ). \*Significantly younger group of students was surveyed at survey 2 versus 1 and 2 ( $p < 0.0005$ ). Analyses are underway to interpret whether this may confound results.

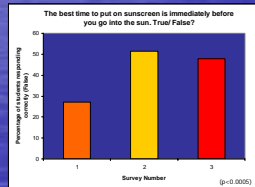
## Knowledge



(Left): % responding correctly (FALSE) changed from 85% to 91% to 93%

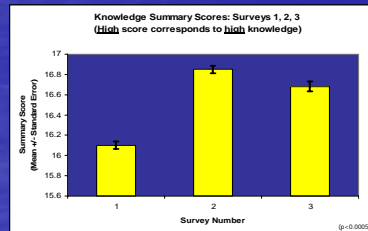
Other examples: Water proof sunscreen only needs to be applied once a day, towel drying swimming or playing in the sun all day. % responding correctly (FALSE) changed from 85% to 91% to 93%.

The sun is not a danger on cloudy days. % responding correctly (FALSE) changed from 33% to 34% to 34%.



(Left): % responding correctly (FALSE) changed from 27% to 51% to 48%.

(Below): Generally, improvements in knowledge remained significant three months later, despite a slight decrease between surveys 2 and 3 ( $p < 0.0005$ ).

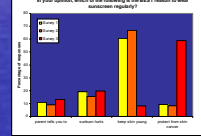


Knowledge Summary Scores: Surveys 1, 2, 3 (Higher score corresponds to high knowledge)

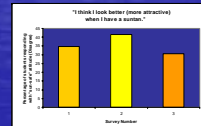
## Attitudes



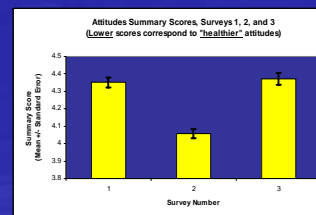
(Left): Approximately half of teens thought that their friend was the factor most likely to stop them from wearing sunscreen regularly, and a third don't like the way it smells. Next on their skin. No change in these responses across surveys.



(Left): dramatic and puzzling shift in attitude between survey 2 and 3. i.e. during this 3 month interim period rather than immediately after education. % responding "keep skin young" changed from 65% to 67% down to 62% by survey 3, and % responding "protect from skin cancer" changed from 9% to 8% to 5% by survey 3!

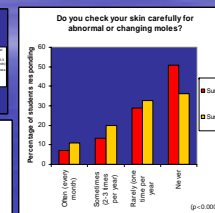


(Left and below): Students revealed healthier attitudes immediately after education, but returned to baseline within three months. This suggests that attitudes may be more culturally engrained and less amenable to change with a single intervention.



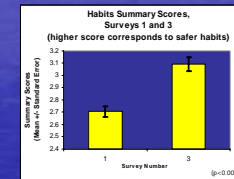
Attitudes Summary Scores: Surveys 1, 2, and 3 (Lower scores correspond to "healthier" attitudes)

## Habits/ Behaviors



(Far Left): There is much room for improvement in terms of hat and sunglasses use.

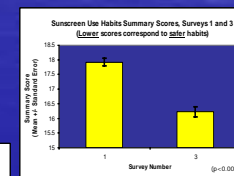
(Left): % of students responding that they "Never" check their skin for abnormal moles decreased from 51% at survey 1 to 38% at survey 3. % responding "Often and Sometimes" changed from 20% to 33%.



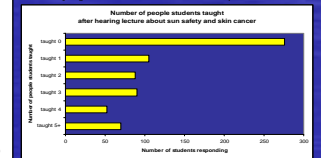
Habits Summary Scores: Surveys 1 and 3 (higher score corresponds to safer habits)

(Left Upper): Overall habits scores improved significantly over three months. These include behaviors such as seeking shade, wearing sunscreen in general, and self-screening of moles.

(Left Lower): All 8 questions pertaining to proper sunscreen usage showed significant overall improvements. For example, "How often do you reapply your sunscreen when outdoors"; % responding "every 2-4 hours" increased from 38% to 51% ( $p < 0.0005$ ). Similar improvements in % of students applying sunscreen 30 minutes before sun exposure as opposed to after they began to feel a burn and in other similar parameters.



Sunscreen Use Habits Summary Scores: Surveys 1 and 3 (Lower scores correspond to safer habits)



## Conclusions

- Knowledge improved significantly between surveys 1 and 3.
- Attitudes were relatively unchanged 3 months after education. This may reflect the cultural matrix in which our attitudes are formed.
- Sun-safe habits and sunscreen usage showed significant, sustained improvements.
- Each student taught, on average, 1.63 other people after the curriculum. This implies that the 5,000 teens we taught in 2005 may have taught 8,150 more people!
- This study provides exciting evidence that this 50-minute curriculum was effective in teaching Orange County teens about skin cancer and prevention with lasting impact.

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