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Original

Dermatologic health literacy in underserved communities: a case report of south Los Angeles middle schools

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Abstract

Background: The incidence of melanoma and other skin cancers has risen drastically in the United States. As with most types of cancer, the prognosis and survival rates are significantly improved with early diagnosis, but dismal for patients who present with advanced disease. It remains a fact that although melanoma is most common in Caucasian populations, ethnic minorities have a worse prognosis. Our hypothesis in this dermatologic health literacy study was that before necessary education, the required fund of knowledge with respect to skin cancer risk is lacking in several ethnic communities, but that intended compliance occurs when educational intervention occurs.

Methods: Three middle schools in South Los Angeles with predominantly Latino and African American youth were surveyed. Permission was obtained from the principals of the middle schools for the multi-day educational initiative. A total of 150 students were ultimately recruited and a pre-intervention survey administered. After preliminary review of the pre-intervention dermatologic health literacy results, a set of “core” learning concepts about sun safety were summarized and solidified for incorporation into the adolescent-appropriate sun safety protection pamphlet that was designed by designers at UCLA/Johnson & Johnson Health Care Institute. A full day of education on skin disease and the importance of sun protection from an early age was executed, followed three months later by a post-intervention visit that assessed compliance with the sun protection products and intended future use.

Results: Results from the pre- and post-intervention surveys/questionnaires were analyzed and interpreted. Of 150 pre-intervention surveys that were distributed, 54 identified as African American and 96 of whom identified as Latino. Of these, 75% of Latino students reported having a sunburn in the last year, whereas only 38.9% of African American students reported a sunburn. A total of 80% of the students reported as least some use of sunscreen in the 3 months prior to the post-intervention survey. Only 8% of African American students reported “everyday” use, whereas 24% of Latino students reported “everyday”

use ($P < 0.05$). A total of 94% of the students intend to wear sunscreen in the future (89% of African American students and 97% of Latino students, with a $P < 0.05$ calculated using a two-sample t test). However, it should be noted that more than half (54%) of the total students reported that although they planned to apply the sunscreen daily, they deemed it too expensive, which might prevent consistent future use.

Conclusions: Our hypothesis in this dermatologic health literacy study was that before necessary education, the required fund of knowledge with respect to skin cancer risk is lacking in several ethnic communities, but that intended compliance occurs when educational intervention occurs. The data, both quantitative and qualitative, demonstrate that our hypothesis is substantiated.

Keywords: Education, Cutaneous oncology, Education methods

Introduction

The incidence of melanoma and other skin cancers has risen drastically in the United States [1]. As with most types of cancer, the prognosis and survival rates are significantly improved with early diagnosis (stage 0 or stage 1), but dismal for patients who present with advanced disease. It remains a fact that although melanoma is most common in Caucasian populations, ethnic minorities have a worse prognosis [2]. Several studies have attempted the difficult task of determining what variables contribute to the ethnic disparities seen in melanoma [3, 4, 5]. First, primary melanoma cancers in ethnic skin usually are found in atypical anatomic sites. African Americans and Asians often present with acral lentiginous melanoma appearing under the nails and soles of the feet; in addition to delaying the diagnosis, this type of melanoma is more aggressive and has worse prognosis. Several studies have also demonstrated that presentation and survival disparities in melanoma are linked to socioeconomic status, with advanced stage at presentation and poor prognosis associated with low socioeconomic status [6, 7]. Furthermore, non-Caucasian populations are often left out of skin cancer prevention research owing to the common misconception that sun protection measures are not critical for these groups.

Skin cancer education initiatives have been tailored towards prevention in Caucasian populations because of their increased risk of developing melanoma. Accordingly, survival rates in Caucasian populations increased from 60% in the early 1960s to 90% in the early 2000s [1]. Unfortunately, such education initiatives in ethnic populations remain limited, even though Latinos are the fastest growing minority group in the United States and the incidence of melanoma in the Latino population has increased drastically [8]. Given the ethnic disparities in melanoma and the data from studies demonstrating poorer survival rates, later stage of presentation, and association with low socioeconomic status, our study sought to establish a sustainable education campaign with emphasis on dermatologic health literacy targeting Latino and African American youth in order to increase awareness and education on skin disease (particularly skin cancer) and the importance of sun protection from an early age. We hypothesized that before necessary education, the necessary fund of knowledge with respect to skin cancer risk is lacking in several ethnic communities, but that intended compliance occurs when educational intervention occurs.

Methods

Several months of research occurred before the actual dermatologic health literacy campaign began. The first, and by far most critical, step was to survey middle schools with predominantly Latino and African American students in order to ensure that the integrity of the study was upheld. Three south Los Angeles middle schools were identified as worthy of being the site of the study with respect to demographics and socioeconomic status. Permission was obtained from the principals of the middle schools and all the teachers graciously offered their science classroom for the educational initiative.

The first site visit was initiated at the three middle schools and our baseline data was collected through a pre-intervention survey (see Table 1) to 150 students. The survey/questionnaires was designed at an adolescent-friendly literacy level to assess skin cancer/disease awareness and misconceptions. After preliminary review of the pre-intervention dermatologic health literacy results, a set of “core” learning concepts about sun safety were summarized and solidified for incorporation into the adolescent-appropriate sun safety protection pamphlet that was designed by designers at UCLA/Johnson & Johnson Health Care Institute. A very important emphasis was placed on incorporating ethnic diversity in this fun and educational pamphlet to ensure that students could relate to the suggestions and recommendations being offered.

After the educational pamphlets were finalized in print, the actual educational intervention was offered at the various middle schools. This day was entitled “Skin Teaching Day” and encompassed a full day of education on skin disease and the importance of sun protection from an early age. After the educational intervention, Cetaphil® SPF 30 daily moisturizer was given to each student to apply daily at home. Daily compliance of the sun protection products were encouraged based on the learning experience

and the students were given suggestions on facilitating daily use (proximity of product to tooth brush to make it part of their daily routine). A post-intervention visit was scheduled for three months later.

During the post-intervention visit, the students were given a post-intervention assessment (see Table 2) that not only assessed knowledge of sun safety, skin cancer, and risk, but also compliance with the sun protection products and intended future use. Of the 150 students who completed the pre-intervention surveys, 148 completed the post-intervention surveys. An additional 8 students were present at the post-intervention day, but not the pre-intervention day and accordingly, were excluded from the study. An educational review of sun safety factors was given via an interactive power point presentation after the post-intervention survey, and Cetaphil® products were again distributed to the students for participation in the study. The middle school was supplied the curriculum (power point, worksheets, and ancillary activities) that were designed for the sun safety session so that it could be repeated annually in subsequent years.

We were granted exemption for full IRB review given that minimal risk research of this study encompassed only surveys/interviews and observation.

Results

Results from the pre- and post-intervention surveys/questionnaires (Tables 1 and 2) were analyzed and interpreted. A total of 150 pre-intervention surveys were distributed to students, 54 of whom identified as African American and 96 of whom identified as Latino. Results of the questionnaire are shown (Table 3).

As can be seen in Table 3, 75% of Latino students report having a sunburn in the last year, whereas only 38.9% of African American students report a sunburn, a significant difference between the two groups ($P < 0.05$).

With self-reporting of sunscreen use (Table 4), one can see that there is not a significant difference ($P > 0.05$) between the two ethnic groups with respect to those that report “always” using sunscreen, but there is a significant difference with respect to those that report “sometimes” using sunscreen (with 50% of Latino students reporting “sometimes” using sunscreen versus 38.9% of African American students reporting “sometimes” using sunscreen).

With respect to assessing healthy sun protection behaviors (Table 5), both groups of students reported being more likely to “seek shade” on a sunny day as opposed to wearing clothing/hat to protect themselves from the sun. There was no significant difference ($P > 0.05$) between the two groups with respect to any of the above categories.

Finally, the most critical questions on the pre-intervention survey were assessing personal risk of skin cancer as well as skin cancer familiarity of each student (Table 6). Overall, 16% of students reported knowing a family member with skin cancer, clearly demonstrating that several students have had exposure in one form or another with respect to insight into the condition and its effect on their families. More Latino students reported knowing a family member with skin cancer (21.9%) than African American students (11.11%), but both groups demonstrated similar data and a non-significant difference ($P > 0.05$) with respect to the majority of answering reporting “YES” to the question about whether or not it is healthy to spend as much time as possible outside.

On a qualitative level, the question on the pre-intervention survey assessed each student’s written answer to the question about why or why not he/she thinks it is important to wear sunscreen and protect himself/herself from the sun. Several students (14) reported in different ways that they do find it important to help prevent sunburn and skin cancer. In addition, 17 students (15 African American students and 2 Latino students) reported in several ways that it was important to wear sun protection in order to be “light skinned.” Finally, another common answer (49 total students, of which 42 were African American and 7 were Latino) reported that it was “not important” for them to protect themselves from the sun since they are “dark skinned” and in different ways expressed that the sun does not affect them and increase their risk of any serious diseases.

With respect to the post-intervention survey (Table 2) that was conducted after the students were encouraged to begin daily use of the Cetaphil® SPF 30 product that was distributed on “Skin Teaching Day,” 80% of total students reported as least some use of sunscreen in the prior 3 months prior to the post-intervention survey (see Table 7). Only 8% of African American students reported “everyday” use, whereas 24% of Latino students reported “everyday” use ($P < 0.05$).

In order to understand reasons for compliance and noncompliance, qualitative results were analyzed from the post-intervention survey. On the question “What did you like about the sunscreen/moisturizer?” the results were variable. A total of 52 Latino students (55%) reported in some form or another an answer related to protecting from sun damage/burn/cancer and/or blocking the

sun; on the other hand, 16 African American students (30%) reported the same answer. However, 31 African American students (57%) reported an answer related to cosmetic benefit on the same question (smooth skin, lightening skin, no freckles, etc.). On the other hand, 14 Latino students (15%) reported an answer related to cosmetic benefit.

Finally, with respect to our hypothesis testing intended compliance, we see that 94% of total students intend to wear sunscreen in the future (89% of African American students and 97% of Latino students, with a $P < 0.05$ calculated using a two-sample t test). However, it should be noted that more than half (54%) of the total students reported that although they planned to apply the sunscreen daily, they deemed it too expensive which might prevent consistent future use.

Conclusion

Given the ethnic disparities in melanoma and the data from studies demonstrating poorer survival rates, later stage of presentation, and association with low socioeconomic status, our study initially sought to establish a sustainable education campaign with emphasis on dermatologic health literacy targeting Latino and African American youth in order to increase awareness and education on skin disease (particularly skin cancer) and the importance of sun protection from an early age. Our hypothesis in this dermatologic health literacy study was that before necessary education, the necessary fund of knowledge with respect to skin cancer risk is lacking in several ethnic communities, but that intended compliance occurs when educational intervention occurs. The data, both quantitative and qualitative, demonstrate that our hypothesis is substantiated.

In our pre-intervention survey, more than one-third of total students reported never having used sunscreen. After the educational endeavor took place and adolescent-friendly literature was distributed, 94% of students in the post-intervention survey report intended future use of sunscreen. Our data revealed several unexpected results, specifically ethnic differences between the African American students and Latino students, particularly in reasons for noncompliance. The justification of cosmetic benefit versus sun blocking/disease reduction benefit was vastly different between the two groups, leading to the conclusion that much more research should be done on this important matter, specifically social/cultural determinants to sunscreen compliance/use.

Based on this initiative, our main recommendation is to make this sustainable and disseminate this important curriculum across middle schools in Los Angeles and have science teachers commit to a 1-2 day lecture (as part of the science curriculum) on sun safety and sun protection. The ultimate goal is that one day, all students across the country get access to standardized education on the importance of sun safety.

Table 1. Pre-intervention survey administered to middle school science students to assess for compliance of sun protection measures.

What is your race/ethnicity?			
Have you experienced a sunburn in the last year? (Yes/No)			
Is it healthy to spend as much time outside in the sun as possible? (Yes/No) Why or why not?			
Do you know a family member who has had skin cancer? (Yes/No)			
<i>On a sunny day, do you.....</i>	Always	Sometimes	Never
Apply sunscreen on your face and/or body?			
Wear clothing that protects your skin from the sun?			
Wear a hat and/or sunglasses?			
Try to stay in the shade?			

Table 2. Pre-intervention survey administered to middle school science students to assess for compliance of sun protection measures.

How often did you use the sunscreen/moisturizer that you were given on “Skin Teaching Day”? (Choose one)	a. Everyday b. A few times per week c. A few times per month d. Never
If you did not put on the sunscreen/moisturizer, why not?	
What did you like about the sunscreen/moisturizer?	
What did you <i>not</i> like about the sunscreen/moisturizer?	
Is it important to protect yourself from the sun? Why or why not?	
Are you going to continue to wear sunscreen every day? (Choose one)	a. Yes, and I will buy more when I run out. b. Yes, but I might not be able to because it’s too expensive. c. No, I will not wear the sunscreen anymore.

Table 3. Pre-intervention self-reporting of at least one sunburn in the last year.

	N ^a and % reporting at least one sunburn in last year
150 Total Students (ages 12-15)	93 (62%)
54 African American Students	21 (38.9%)
96 Latino Students	72 (75%)

^aN and % accord to number and percentage of respondents, respectively

Table 4. Pre-intervention self-reporting of sunscreen use in the last year.

	N ^a and % reporting sunscreen use
150 Total Students (ages 12-15)	30 Always (20%) 72 Sometimes (48%) 48 Never (32%)
54 African American Students	12 Always (22.2%) 21 Sometimes (38.9%) 21 Never (38.9%)
96 Latino Students	21 Always (21.9%) 48 Sometimes (50%) 27 Never (28.1%)

^aN and % accord to number and percentage of respondents, respectively

Table 5. Pre-intervention self-reporting of sunscreen use in the last year.

	Report wearing clothing to protect from sun	Report seeking shade on a sunny day	Report wearing sunglasses and/or hat on a sunny day
150 Total Students (ages 12-15)	63 Always (42%) 72 Sometimes (48%) 15 Never (10%)	81 Always (54%) 54 Sometimes (36%) 15 Never (10%)	21 Always (14%) 72 Sometimes (48%) 57 Never (38%)

54 African American Students	33 Always (61.1%) 18 Sometimes (33.3%) 3 Never (5.6%)	36 Always (66.6%) 18 Sometimes (33.3%) 0 Never (0%)	9 Always (16.7%) 27 Sometimes (50%) 18 Never (33.3%)
96 Latino Students	39 Always (40.6%) 54 Sometimes (56.3%) 3 Never (3.1%)	45 Always (46.9%) 33 Sometimes (34.4%) 18 Never (18.7%)	15 Always (15.6%) 42 Sometimes (43.8%) 39 Never (40.6%)

Table 6. Pre-intervention self-reporting of skin cancer risk and skin cancer familiarity.

	Report knowing a family member with skin cancer	Is it healthy to spend as much time outside in the sun as possible?
150 Total Students (ages 12-15)	24 (16%)	108 YES (72%) 42 NO (28%)
54 African American Students	6 (11.11%)	42 YES (77.8%) 12 NO (22.2%)
96 Latino Students	21 (21.9%)	66 YES (68.75%) 30 NO (31.25%)

Table 7. Post-intervention self-reporting of sunscreen use after “Skin Teaching Day.”

	N ^a and % reporting sunscreen use	N ^a and % reporting intended use of sunscreen in future
148 Total Students (ages 12-15)	27 Everyday (18%) 68 Few times/week (46%) 24 Few times/month (16%) 29 Never (20%)	139 YES (94%) 9 NO (6%)
54 African American Students	4 Everyday (8%) 19 Few times/week (35%) 14 Few times/month (26%) 17 Never (31%)	48 YES (89%) 6 NO (11%)
94 Latino Students	23 Everyday (24%) 49 Few times/week (52%) 10 Few times/month (11%) 12 Never (13%)	91 YES (97%) 3 NO (3%)

^aN and % accord to number and percentage of respondents, respectively

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