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Evaluation of educational videos to increase skin cancer risk awareness and sun safe behaviors among adult Hispanics (Revision 1)

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Abstract

Although skin cancer is less common in Hispanics, they are at higher risk for presenting with more advanced stage skin cancer. We performed semi-structured interviews with Hispanic women that found high concern for photo-aging from sun exposure. Based on these results, we developed two short Spanish language films. The first emphasized photo-aging benefits of sun protection, while the second focused on its benefits for skin cancer prevention. Our hypothesis was that the reduction of photo-aging would be a more persuasive argument than skin cancer prevention for the adoption of sunscreen use by Hispanic women.

Study participants were recruited from beauty salons located in predominantly Hispanic neighborhoods. Each of the two Spanish language films was approximately 3 minutes long. A pre-intervention questionnaire assessed subjects' general knowledge and sunscreen habits, and a second questionnaire administered after viewing both films assessed for improvements in risk perception and inquired about which film was more persuasive.

Eighty Hispanics participated ranging in age from 19-75. The pre-education survey found that 54 out of 80 believed that fair-skin Hispanics (FS) were at risk for skin cancer, and 44 out of 80 believed that dark skin Hispanics (DS) were at risk. These numbers increased to 72 (FS) and 69 (DS) after the intervention (p-value: <0.0002 FS, <0.0001 DS). Hispanics overwhelmingly selected the video emphasizing the benefits of sun protection for skin cancer prevention as the more persuasive film (74 out of 80).

A Spanish language video has the potential to make an impact in healthy sun protective behaviors, and information on how to properly apply sunscreen should be included in educational messages.

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Introduction

It is well known that the Hispanic/Latino (referred to as Hispanic) population living in the United States (U.S.) suffers from an unequal burden of certain diseases compared to non-Hispanic Whites (referred to as Whites). [1] Studies on U.S. Hispanics have found that this group is in the midst of experiencing an increase of both non-melanoma skin cancers (including basal cell and squamous cell carcinoma) as well as melanoma. [2,3] Ultraviolet (UV) radiation exposure has been shown to increase the risk of developing any of these three skin cancers. Melanoma, the most aggressive of the three skin cancers listed, has been strongly linked to sunburns during childhood. [4]

Although the number of melanoma cases is lower among Blacks and Hispanics as compared to Whites, late stage presentations are more common among skin of color populations. [5] Health education campaigns have been credited with the improvement of 5-year melanoma survival rates from 68% to 92% in Whites over the past 30 years. Despite the widespread nature and easy availability of these public education campaigns, skin of color populations have not experienced a statistically significant improvement in survival during this same period. [6-8] Instead, disparities in late-stage presentations have been found and all skin cancers including melanoma appear to be increasing in the Hispanic population, particularly among men. [2] This skin cancer outcome disparity has been attributed to multiple factors including biological/genetic factors and health care system issues such as access to care. [9] Misperception of skin cancer risk is in all likelihood one of the principal reasons why many Hispanics are less likely to use sunscreen or perform skin self-examinations, as compared to their non-Hispanic counterparts. [10,11] Educational efforts among Hispanics that raise skin cancer awareness help to correct this population's misperception of risk and aid them in developing a better understanding of skin cancer and its relationship to ultraviolet exposure.

The potential effectiveness of short educational videos (also referred to as films) for improving cancer knowledge, healthy behaviors, and even participation in cancer screening has been reported. [12-14] Many of these studies have also found high patient satisfaction rates with the use of videos. Advantages of educational videos include: potential use in both clinical and nonclinical environments, distribution to patients for viewing at a later time, a method of supplying supplemental education materials while placing minimal burden on practice resources, and the ability to be repeatedly viewed to help clarify information. [14] We found that Spanish-speaking women were very concerned about photo-aging effects and developed a hypothesis that Hispanic women would find a video instructing them on the benefits of sun protection for the prevention of photo-aging changes to be more persuasive than a video emphasizing the benefits of adopting healthy sun behaviors for skin cancer prevention.

Methods

Opinions and attitudes regarding healthy skin and sun protective behaviors

This study was approved by the University of Illinois at Chicago's (UIC) Institutional Review Board. For a two-month period, Spanish-speaking Hispanic women were accrued

from the UIC Dermatology clinic to participate in semi-structured interviews. All spoke Spanish as their primary language with limited to no English proficiency. They were identified as a potential study subject if they requested a Spanish interpreter at the time of their clinic visit. Research assistants (RA) explained the purpose of the interviews and obtained consent from eligible participants. Interviews were performed on a one-on-one basis by a bilingual RA who initially asked open-ended questions regarding their opinions and attitudes on the components of healthy skin. These interviews were audio-recorded. After the initial interviews, the RAs posed a series of specific questions regarding their age, perception of their skin cancer risk, and current use of sunscreen products. A total of 52 Hispanic women participated ranging in age from 18-80 years.

Video Development

None of the women mentioned skin cancer as a concern during the initial open-ended portion of their interviews, although 48 mentioned photo-aging changes as their major concern regarding their skin. Based on these interviews, two videos were designed by a Spanish-speaking dermatologist and two Spanish-speaking medical students. The first video included content about ultraviolet light and its photo-aging effects including: premature aging, skin laxity, wrinkles, sun spots (lentigos). The potential beneficial aspects of sunscreen in reducing the appearance of these photo-aging effects were strongly emphasized. Other sun protective behaviors such as seeking shade, use of sun protective clothing, sunglasses, etc. were also reviewed. The second video reviewed skin cancer and risk factors. Emphasis was placed on the fact that skin of color can develop skin cancer, and the video used photographs of individuals of color affected with skin cancers to increase the relevance of the content to Hispanics viewers. As in the first video, this film also reviewed the use of sun protective behaviors such as the use of sunscreen, although the emphasis was placed on its potential role in reducing the potential carcinogenic effects of ultraviolet light. Each video was approximately 3 minutes in length. Two Spanish surveys were developed and administered pre- and post-video. The pre-video survey assessed general knowledge about skin cancer, sunscreen use, and the perceived risks of skin cancer while the post-video questionnaire probed the participants' opinions as to which video they believed was the most effective at persuading them to use sunscreen or practice other sun safe behaviors.

Both videos and questionnaires were piloted in the UIC dermatology clinic. Nine patients, whose primary language was Spanish, were asked to view the videos and review the questionnaires. Participants were asked if there was any part of the videos or questionnaires that they did not understand. They were also asked if they found any of the images of the potentially destructive nature of skin cancers to be offensive. All nine participants stated the videos and questionnaires were understandable, without obvious Spanish language errors, and no changes were made based on this pilot.

Video Intervention

Study participants for the video intervention were recruited from five beauty salons located in the Pilsen neighborhood in west Chicago. According to the 2010 census, Pilsen is approximately 82% Hispanic. [15] Beauty salons were selected in the community to avoid recruiting subjects in the dermatology clinic where many may have already received sun

protection education materials. Clients in the salon have time to watch the videos during hair processing treatments with minimal disruption to their daily activities. Men were not excluded from this portion of the study. Subjects were approached, assessed for eligibility (adults who spoke Spanish with limited to no English proficiency), and consented. The pre-video survey was administered prior to viewing any educational materials, and a post-video survey was administered immediately after the participants viewed both films. Half of the subjects viewed the skin cancer film first followed by the photo-aging film, while the other half saw the photo-aging film first followed by the skin cancer film. All subjects viewed both videos prior to completing the post-video survey.

Results

Opinions and attitudes regarding healthy skin and sun protective behaviors

A total of 52 Hispanic women participated in the semi-structured interviews conducted during the June-July months. They ranged in age from 18-80 years of age with the largest number interviewed between the ages of 30-39 (Table 1). Although none of the women initially mentioned skin cancer as a concern, 25 (48%) stated they believed they were at risk once they were directly asked by the RAs during the second half of the interviews about skin cancer. Twenty of the 52 participants did not use any sunscreen whereas 32 participants stated they used sunscreen. Although this may seem initially encouraging, it became apparent during the interviews that the use of sunscreen was not as recommended among those who stated that they used sunscreen. Participants reported using sunscreen: “only when I am out in the sun”, “in the morning”, “only when it is very sunny”. The most frequent description was sometimes or occasionally (“a veces”), with 11 of the 32 women using this term. Only 3 women stated they applied sunscreen more than once during the day. Nearly all were concerned about some aspect of the aging process, with 48 stating they did not want to develop “sun spots” or lentigos and 35 citing concerns regarding wrinkles/skin laxity.

Video Intervention

A total of 80 Hispanics participated in the video portion of the study: 67 women and 13 men ranging in age from 19-75. At baseline prior to viewing any video education, 54 out of 80 believed that fair-skinned Hispanics were at risk for skin cancer. This improved to 72 out of 80 in the post-education questionnaire. The pre-education survey also asked about subjects' opinion regarding the skin cancer risk of individuals with darker skin tones. Initially, 44 out of 80 believed individuals with dark skin tones could develop skin cancer, and this number increased to 69 after viewing the videos. For both questions regarding fair and dark skin, the agreement proportion was significantly different between the pre- and post-education videos (p-value: <0.0002 for the fair skin question and <0.0001 for the dark skin question). McNemar's test was utilized to test for the mean difference in proportions between pre- and post-education video groups. Data analysis was performed using SAS software, version 9.2 of the SAS Institute Inc. There were 56 participants who self-reported sunscreen use in the pre-education questionnaire. This number increased to 76 who “plan” to use sunscreen after viewing the films. Despite the initial interviews suggesting that photo-aging education might be effective, the Hispanics who viewed the two videos developed for this study

overwhelming selected skin cancer as the more persuasive film (74 out of 80), with only 6 selecting the photo-aging benefits as more persuasive.

As with the semi-structured interview group, the frequency of sunscreen application was not ideal in this second group because 32 stated that they applied it only once per day, 6 applied twice per day, and only 1 applied more than twice per day. Occasional use was described by 17 of the 56 participants who used sunscreen (only when it was very sunny, only when in the sun for an extended period of time). An encouraging note was that many study participants did engage in using other sun protective behaviors on a regular basis (i.e. use of sunglasses, umbrellas, etc.). Of the 44 participants who stated they had children, 33 applied sunscreen to their children. Please refer to Table 2 for a complete list of pre- and post-questionnaire responses.

Discussion

Although there are now several studies which have demonstrated that U.S. Hispanic adults are less knowledgeable about skin cancer, do not engage in protective behaviors on a routine basis, and have lower risk perception, there is a dearth of literature on potential interventions to change these behaviors. Health information can be delivered through various educational media, such as written pamphlets, videos, face-to-face counseling, and web-based applications. [16,17] The use of video, however, has been shown in the literature to offer several advantages over other forms of media: videos can provide a less resource-intensive means of disseminating educational content to a broad audience [18], remove inconsistencies across educators and provide a more standardized education [19,20], and serve as an attractive means of education particularly for those with low health literacy. [21] A systematic review comprising of 28 studies using video interventions across various medical specialties found that video-based education significantly affected certain types of health behaviors including sunscreen adherence, self breast examination, and prostate cancer screening, and had no significant effect in changing other kinds of behavior such as influencing addiction behaviors. [17] Of particular interest is a randomized controlled trial study evaluating the efficacy of online video as an educational vehicle for sunscreen use compared to a written module. [22] It was found that patients who viewed the videos showed improvement in sun protective knowledge and demonstrated greater adherence to sunscreen use. [22] These results support the efficacy of video for educating patients on the importance of sunscreen use and proper sunscreen application.

In our study, we decided to take advantage of the effectiveness of educational videos and create ones promoting sun protective behaviors to target the Hispanic patient population, a group of individuals in particular need for such an intervention. Despite initial interviews suggesting that an emphasis on photo-aging education might be particularly effective for women, Hispanics who had viewed the two videos developed for this study overwhelmingly selected the video promoting sun protection as a means to reduce skin cancer risk as the more persuasive film. The word “cancer” is a powerful word as it strikes fear in almost anyone in the English language, and clearly this diagnosis carries the same weight and fear in the Spanish language. Although there is a strong desire to appear youthful, Hispanics overwhelmingly felt that the cancer message was more powerful when confronted with the

knowledge of the possibility of developing of cancer from sun exposure. Even though the videos were short in length, they still managed to make a significant improvement in participant risk perceptions. Assisting the Hispanic community in developing an improved understanding of their true skin cancer risk is an important step in engaging and motivating this population to participate in sun protective behaviors.

Ultimately, a message that combines information about both benefits may be best. Photo-aging may initially capture the viewer's attention (especially women) allowing for a later transition into a skin cancer message, the more powerful motivator according to this study. This formula may not be as effective in capturing the attention of men, and it will likely need to be modified when directly targeting them. However, men may still benefit from messages that influence females because women are likely to have a major role in making decisions regarding household expenditures/purchases, possibly making sun protection products more available in the home. If women come to believe that participating in healthy sun protective behaviors is important, they may apply "requests, reminders, rewards, or threats" to try and influence their partner's behaviors, indirectly improving healthy sun protective behaviors in men. [23]

The majority of Hispanics in both the interviews and intervention groups was found not to use sunscreen on a consistent basis. Education on the proper amount and frequency of sunscreen use should be included in future educational messages. Sunscreen products have labels that are written in English, leaving many non-English proficient Hispanics unable to read how to properly use the products. This may in part account for why sunscreen products are not used correctly in this community. Ancillary Spanish language educational messages posted in stores near sunscreen products or sun protection products with both English and Spanish directions for use are possible points for interventions. Using mass media to produce short education pieces on news broadcasts or public education messages also has the potential to assist the medical community in changing public misperceptions of risk. Further research is needed to see if these interventions can help improve sun-safe behaviors in this community.

Limitations of our study are that we developed the videos using primarily the opinions of women rather than men, and the male sample size in the intervention group was extremely limited. Another limitation is that although the films may make a persuasive argument for the use of sunscreen, our intervention did not directly measure whether any behavioral change actually occurred. In other words, did individuals go out and purchase and apply sunscreen? Although we did not directly measure any increase in sunscreen use, it has been proposed that exposure to health education does influence health-related choices so education remains an essential goal to achieve. [24] Subjects watched the videos only once prior to completing the second questionnaire. If any information was unclear, they were not able to re-play the videos at that time. Therefore, repetitive exposure to educational messages is important to try and reach those who either did not understand or remained skeptical about skin cancer risk because we did not achieve 100% understanding in our post-education questionnaire.

It would also appear wise to emphasize the use of other methods such as the use of hats, sunglasses, sun-protective clothing, etc. Many Hispanics appear to be currently using these methods, and educational messages should reinforce these behaviors rather than solely focus on trying to persuade adoption of a new method (i.e. sunscreen use). These alternative sun protection methods also have potential financial benefits because these purchases can continue to provide protection for several years (i.e. a hat could be used by its owner over the course of several years) and do not require re-application during the day. This could be especially helpful for those who work in environments (i.e. agriculture, labor) in which issues such as a heavy layer of perspiration make reapplication of sunscreen a challenge, those who have limited incomes, or those who remain skeptical about the efficacy of sunscreen.

Conclusion

Given the rising incidence of non-melanoma skin cancer and melanoma among U.S. Hispanics, interventions aimed at reducing this knowledge gap and improving healthy sun protective behaviors are important. This study is one of the few that develops and assesses the impact of an intervention to attempt to change misperceptions of risk and encourage participation in sun protective behaviors among U.S. Spanish-speaking Hispanics. The use of a Spanish language educational video has the potential to make an impact in healthy sun protective behaviors. Short videos could be created for use in the mass media to create increased awareness, while longer length videos could be used in health care offices/hospitals providing reinforcement of the risk for skin cancer from a trusted medical professional source.

Videos should include messages about using sunscreen without ignoring the opportunity to reinforce other sun safe behaviors as well. Any discussion of the use of sunscreen products should include information about the need to reapply sunscreen during the day and encourage the Spanish-speaking public to review the product's directions to maximize its potential benefits. A video-based educational public health program on skin cancer prevention could be one component of a multi-intervention effort to educate Hispanics about sun protection and to reduce the rapidly rising number of skin cancers seen in this expanding segment of the U.S. population.

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Table 1

Semi-structured interviews with Hispanic Women

Age	Number of participants	Believes she can develop a skin cancer	Concerned about photo-aging				Uses sunscreen products	Uses anti-wrinkle creams *			
			Lentigos		Wrinkles			Yes	No	Yes	No
			No	Yes	No	Yes					
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
18-25	3	2	1	3	0	2	1	3	0	3	3
25-29	5	1	4	5	0	5	0	2	3	1	4
30-39	26	14	12	24	2	18	8	17	9	8	18
40-49	7	5	2	7	0	5	2	5	2	2	5
50-59	7	3	4	7	0	4	3	4	3	3	4
60-69	3	0	3	2	1	1	2	1	2	1	2
70-79	0										
80+	1	0	1	0	1	0	1	0	1	0	1
TOTALS	52	25	27	48	4	35	17	32	20	15	37

SC= skin cancer;

* participants were informed that sunscreen should not be considered an anti-wrinkle product for purposes of this survey

Table 2

PRE-FILM QUESTIONNAIRE	
When in the sun do you...	
Sunburn easily, never tan	11
Sunburn easily, tan with difficulty	31
Sunburn with difficulty, tan	17
Tan easily, never sunburn	21
Do you use sunscreen?	
Yes	56
No	24
How often do you apply sunscreen? (from 56 “yes” responses)	
1 time per day	32
2 times per day	6
More than 2 times per day	1
Only on occasions when in sun	17
What is the SPF of the product you use?	
5-15	8
16-30	16
>30	32
Why do you use sunscreen?	
Prevent tanning	2
Prevent sunburns	24
Prevent signs of aging	21
Prevent skin cancer	29
Other	0
Why do you NOT use sunscreen? (from 24 “no” responses, participants were allowed to pick more than one response)	
Don't know what to use	11
Don't think I need it	16
Not in sun	7
Cost	0
Do you use any of the following do you use on a regular basis?	
Hats for sun protection	37
Sunglasses	64
Sun protective clothing	14
Umbrellas	13
Do you have children?	
Yes	44
No	11
Do your children use sunscreen? (from 44 yes responses)	
Yes	33
No	11
What is the SPF of the product you use on your children?	

5-15	5
16-30	6
>30	22
Whites are at risk for skin cancer.	
Agree	58
Disagree	22
POST FILM QUESTIONNAIRE	
I plan to use sunscreen?	
Yes	76
No	5
What are the reasons that you have decided to use sunscreen? (participants were allowed to select more than 1 answer)	
Prevent signs of aging	21
Prevent skin cancer	66
Prevent tanning	4
Prevent sunburns	15
Why do not want use sunscreen? (from 5 "no" responses)	
Not in sun	4
Don't think I need it	1
Which film provided a more persuasive reason for you to use sunscreen?	
Photoaging prevention benefits	6
Skin cancer prevention benefits	74
I am more likely to use sunscreen to prevent which of the following...? (Participates were shown photographs of a face with many wrinkles and second photograph of a small skin cancer on the nose. They were asked to select a photograph.)	
Wrinkle Picture	9
Skin cancer picture	61
I would like more information regarding how sunscreens may help prevent the following...	
Men	Women
Skin cancer 10	Skin cancer 10
Photoaging 1	Photoaging 27
I don't want more information 2	I don't want more information 8
PRE AND POST QUESTIONNAIRE QUESTIONS	
Fair skinned Hispanics are at risk for skin cancer.	
<u>Pre-film education</u>	<u>Post-film education</u>
Agree 54	Agree 72
Disagree 26	Disagree 8
Dark-skinned Hispanics are at risk for skin cancer.	
<u>Pre-film education</u>	<u>Post-film education</u>
Agree 44	Agree 69
Disagree 36	Disagree 11