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A Preliminary Study of a Video Intervention to Inform Solid Organ Transplant Recipients About Skin Cancer

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Abstract

Purpose—To obtain preliminary evidence on the effect of a skin cancer prevention video for adult solid organ transplant recipients (SOTR) and informational brochures on outcomes of skin cancer knowledge, beliefs, prevention and detection behaviors, and personal agency (self-confidence/personal control) for behaviors.

Background—SOTR have a high risk of skin cancer potentiated by life-long immunosuppressive therapy posttransplantation. Skin cancer in SOTR is aggressive and difficult to treat. Prevention and early detection are important for reducing risk and improving skin cancer outcomes, but methods to inform SOTR about their risk are understudied.

Methods—A brief, evidence-based skin cancer informational video tailored to SOTR was evaluated using a quasi-experimental design that compared the outcome variables in two groups of SOTR seen in 4 transplantation clinics within 4–6 weeks posttransplantation. The video/brochure group (VBG) viewed the video once and received skin cancer information brochures. The brochure group (BG) received brochures only. Participants completed a survey on sun protection behavior (6 items; alpha = 0.75), personal agency (6 items; alpha = 0.64), beliefs (6 items; alpha = 0.60), skin cancer knowledge (6 items), and skin self-examination (SSE; 1 item) at baseline and 3 months postintervention. Data were analyzed using descriptive statistics and 2 × 2 analysis of variance.

Results—Of 113 participants, 90 completed both surveys (VBG, $n = 46$; BG, $n = 44$). Both groups had a significant increase in sun protective behavior ($P < .001$), skin cancer knowledge ($P < .001$), beliefs ($P = .003$), and personal agency ($P = .003$). There was no effect of either intervention on SSE.

Conclusion—Both interventions effectively informed SOTR about skin cancer and sun protection, promoted favorable beliefs, and improved personal agency, but were not differentially effective, suggesting that the addition of the video may not be necessary or that the video may need to be viewed more than once. More in-depth SSE teaching strategies may be necessary.

Skin cancer is the most frequently occurring cancer in solid organ transplant recipients (SOTR).[1] Skin cancer in SOTR is aggressive and difficult to treat; thus, prevention and early detection potentially reduce risk and improve skin cancer outcomes.[2] Prevention focuses on

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sun protection.[3] For detection, SOTR should have a full body clinical skin examination at least yearly[4–6] and do skin self-examination (SSE) monthly.[7] There are few studies of skin cancer prevention and detection information delivery for SOTR. Existing studies have used print and verbal information interventions,[8,9] which may not sustain skin cancer knowledge, attitudes, and behaviors.[8,10] Interventions such as video have not been studied in SOTR, yet transplantation experts have suggested that video is an important messaging strategy.[7]

The purpose of this study was to obtain preliminary evidence on the effect of a skin cancer prevention video tailored to adult SOTR and informational brochures on outcomes of skin cancer knowledge, beliefs, prevention and detection behaviors, and personal agency (self-confidence/personal control) for behaviors. Subjects in a video brochure group (VBG) viewed the video once and received 3 skin cancer informational brochures. Subjects in a brochure group (BG) received the brochures only.

METHODS

The University of Arizona (UA) Human Subjects Protection Committee approved the study. Recruitment and data collection occurred at 4 UA transplantation clinics (heart, kidney–pancreas, liver, and lung). SOTR in these clinics typically received minimal skin cancer information. We used a quasi-experimental design, with subjects from the 4 clinics receiving the same condition during the same period to avoid contamination. Each clinic used both conditions but in different random orders. Eligible SOTR were men and women, age ≥18 years, English literate, of any race or ethnicity, who were within 4–6 weeks of their first organ transplantation and seen as an outpatient. Transplant coordinators informed eligible patients about the study. Interested SOTR then met with the study coordinator, signed consents, completed survey 1, and received the intervention in the clinic setting.

To develop the 10-minute video, *Skin Cancer: Know Your Risk After Transplant,* 3 UA skin cancer experts and 1 SOTR with skin cancer reached consensus to include skin cancer incidence, mortality and risk factors specific to SOTR, sun protection, and skin examination. The experts also agreed on the video storyboard and suggestions for testimonials. UA technology experts provided pre-and postproduction services. Before implementation, the video underwent formative evaluation by dermatology and transplant specialists. The brochures, published by the UA Skin Cancer Institute, are written at a 6th-grade reading level and contain appealing colors, graphics, and photographs. The *Sunscreen and Sunblock Facts* brochure describes rationale for sun product use, choice, and application. *Skin Cancer: What Does it Look Like* describes skin cancer recognition and SSE. These brochures were tested previously for content and visual appeal. A third brochure developed by the expert panel, covered skin cancer incidence, mortality, and risk factors specific to SOTR.

All subjects completed baseline survey 1 on sun protection behavior (6 items; alpha = 0.75), personal agency (6 items; alpha = 0.64), beliefs (6 items; alpha = 0.60), skin cancer knowledge (6 items), and SSE (1 item). Subjects in the VBG then viewed the video using a portable DVD player with headphones while waiting to see their healthcare provider. They received the brochures after viewing the video. BG subjects received the brochures after completing survey 1. All subjects completed the same survey 3 months postintervention (survey 2). Data were analyzed using descriptive statistics and 2 × 2 repeated measures analysis of variance (ANOVA) using SPSS v.20.[11] The first factor was the intervention group (2 levels: VBG, BG). The second factor was time (baseline, 3 months). Time by group interaction was used to detect differential intervention effects, that is, if the change from baseline to 3 months differed between the groups. $P < .05$ were considered significant.

RESULTS

Table 1 lists the baseline characteristics of the 113 subjects enrolled. Of those, 90 completed both surveys (80% response rate; VBG, $n = 46$; BG, $n = 44$). The sample mean age was 51.5 years ($SD = 14.24$). There were no differences in demographic characteristics between completers and noncompleters of survey 2. The majority (83%) had undergone kidney transplantation. Based on ANOVA results ($n = 90$), both the VBG and the BG showed improved sun protective behavior ($P < .001$), skin cancer knowledge ($P < .001$), beliefs ($P = .003$), and personal agency ($P = .003$). There was a trend toward a differential intervention effect (ie, an interaction) for sun protective behavior ($P = .087$) and knowledge ($P = .054$). There was no effect of either intervention on SSE.

DISCUSSION

Informing SOTR about their personal increased risk of skin cancer and methods to lower their risk are important, yet the best methods to accomplish these goals are unknown. Our preliminary findings show that video/brochure and brochure-only interventions effectively improve short-term skin cancer knowledge, sun protection behavior, favorable beliefs, and personal agency in recently transplanted SOTR. Other similar studies have used print or verbal information as interventions. Clowers-Webb et al[8] did not find improvement in skin cancer knowledge (time since transplant unknown) 3–9 months after routine standard verbal and print skin cancer education versus repetitive print information plus the routine education. However, these authors noted that their transplantation program provided skin cancer information before, rather than after, transplantation.

Our finding of unimproved SSE was unanticipated, given that participants had a fairly high education level, more favorable skin cancer beliefs, and improved personal agency for SSE. This finding is consistent with results from Kim et al,[12] but contradicts other reports of significantly increased SSE from baseline evaluation up to 9 months in SOTR who received printed skin cancer information and verbal advice posttransplantation.[8,9] We did not assess SSE barriers such as age or vision. The video did not contain step-by-step SSE instructions (these were in the brochure), so SOTR may require more in-depth visual teaching strategies. The 1 SSE measurement item may not have been adequate to fully capture self-reported SSE. We agree with Kim et al[12] that awareness of the cumulative effects of immunosuppression and skin cancer risk factors may eventually motivate SOTR to do SSE. Future research should address the type and timing of SSE instruction.

Our video/brochure and the brochure interventions were not differentially effective, suggesting that adding the video to the brochures may not be necessary or that the video may need to be viewed by SOTR more than once or that an enhanced video may be needed. Video is costly to develop and update; however, its appeal for convenience and low-literacy situations cannot be ignored.[13] Using video in the clinic setting could save time if used for basic education, then followed by patient-tailored information. Additionally, a video/brochure intervention offers a variety of information approaches advocated by some authors.[7,14]

Our results showed that SOTR can use either intervention to effectively improve skin cancer knowledge, beliefs, prevention behaviors and personal agency early posttransplantation. In contrast, Kim et al[12] stated that the first few months posttransplantation were too early for skin cancer education, given SOTRs' concerns about new organ viability, new medications, clinical visits, and hesitation to learn about a potential new disease, especially cancer. We suggest that it is never too early to begin skin cancer education posttransplantation,

particularly if SOTR have favorable beliefs about skin cancer prevention and confidence in their ability to perform protective behaviors.

We agree with others who suggested that this information be repeated for several years posttransplantation.[8,9,12] Our study was limited by a small sample, short timeline, and use of 1 institution. We plan to conduct a larger study to expand the intervention to multiple transplantation sites to begin to capture the approximate 5-year period post-transplantation when most SOTRs develop skin cancer.[15,16]

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Table 1

Comparison of the Characteristics of the Two Intervention Groups at Enrollment (n = 113)

	Video + Brochure Group (n = 54)		Brochure Group (n = 59)	
Characteristic	***n***	**Percent Within Group**	***n***	**Percent Within Group**
Gender				
Male	36	66.7	36	61.0
Female	18	33.3	23	39.0
Education				
Grade school	4	7.4	7	11.9
Some high school/GED	16	29.6	13	22.0
Technical school/some college	21	38.9	19	32.2
Associate degree	3	5.6	7	11.9
Bachelors degree	8	14.8	5	8.5
Graduate degree	2	3.7	8	13.6
Race				
White	28	51.9	32	54.2
American Indian	3	5.6	6	10.2
African American	2	3.7	4	6.8
Asian	3	5.6	1	1.7
More than one race	5	9.3	6	10.2
Unknown/other	13	24	10	17.0
Ethnicity				
Non-Hispanic	27	51.9	40	67.8
Hispanic/Latino	23	44.2	18	30.5
Unknown	2	3.8	1	1.7
Skin cancer risk factors				
Blue/green/hazel/gray eyes	15	27.8	27	45.7
Sunburns easily	10	18.5	11	18.6
Blonde/red hair	0	0	15	25.4
>50 moles	6	11.1	2	3.4
>50 freckles	4	7.4	3	5.1