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Enhancing Skin Cancer Screening through Behavioral Intervention

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In this issue of JAMA Dermatology, Janda and colleagues report on the results of a randomized controlled trial of a video-based behavioral intervention aimed at increasing clinical skin examination (CSE) among men 50 years of age and older in Queensland, Australia. At seven-month follow-up, men who received informational brochures were as likely as the video intervention group to have obtained a CSE (53% vs. 56%, respectively). However, the video intervention group was more likely than controls to self-report a whole-body rather than a partial or spot CSE (35% vs. 27%, respectively), to have been asked by their physicians to return for a follow-up exam, to have been diagnosed with a malignancy, and to have had surgical management of a lesion. Previously, several large studies conducted in Australia and the UK concluded that without whole-body examination, many melanoma and nonmelanoma diagnoses would be missed.^{1,2} Janda and colleagues also report on other correlates of CSE uptake and skin cancer diagnosis.

This work possesses many notable methodologic strengths. These include the detailed report of a randomized controlled trial supplemented by two prior publications describing other aspects of the study, enrollment of men 50 years of age and older (a group known to be at high risk of melanoma and death from melanoma³), random selection from the Queensland compulsory electoral roll with a respectable 37% response rate for the baseline telephone survey, a relatively large sample size ($n = 929$ at baseline), inclusion of participants with lower education and income levels than in many other trials, the use of the Health Belief Model⁴ as a theoretical framework, an intervention targeted specifically toward older men based on formative qualitative interviews, 94% sample retention at seven-month follow-up, telephone interviewers independent from the research team and blinded to intervention condition, 83% corroborative medical reports for the 59% of men who consented to share their medical reports, and listing with the Australian New Zealand Clinical Trials Registry.

Although outweighed by numerous strengths, the authors note that because they focused on analysis of CSEs corroborated by a physician, they may have overestimated the skin cancer diagnosis rate since men who did not consent to medical reporting were less likely to report suspicious lesions but were not included in some analyses. It would have also been interesting to know whether intervention participants were any more likely to seek screening from dermatologists than general practitioners. The authors had previously reported that Australian general practitioners are excellent at diagnosing skin cancer, but this may not be the case in some other countries.

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As the authors point out, the impact of the intervention may have been less than it could have been since the participant pool was already fairly motivated. At baseline, 81% of participants reported that a physician had ever checked any part of their skin for skin cancer, and 39% had had a whole-body CSE within the last year. These high baseline rates among the Queensland population are presumably due to decades of media and community-based skin cancer awareness campaigns, conducted in part by Janda and colleagues. Among US adults on the other hand, rates of *ever* having had a CSE have been found to be approximately 15–17%,^{5,6} and large community-based skin cancer screening interventions are uncommon.

Also in relation to patient motivation, there was a trend toward intervention men who reported CSE and having watched the DVD more than once being more likely to report a *whole-body* CSE than those who watched it 0–1 time. Presumably men who watched the DVD one or more times were also more likely than men who did not watch the video to report CSE at all. This would suggest a potential dose-response relationship; however, 50% of men who denied watching the video still reported obtaining a whole-body CSE. A major challenge in health behavior research and practice is not only adherence to the recommended behavioral outcome (i.e., skin cancer screening) but also adherence to the recommended intervention (i.e., viewing the video or brochure), even among seemingly motivated populations.

The study eligibility criteria of English language proficiency and access to a DVD player may limit generalizability of the findings somewhat. Socioeconomic factors such as these have been associated with skin cancer screening.⁷ For example, in the current study, individuals with a regular general practitioner were more likely to self-report a CSE than others. Interesting questions for future research would be for which subpopulations were the interventions most effective, particularly when comparing by education, socioeconomic status, ethnicity, and so on, and how to optimize the interventions for other cultures such as non-English speakers and US or European populations. Though skin cancer rates are lower in non-Caucasian groups, racial and ethnic minorities are not immune from the disease, and sometimes face higher mortality rates relative to incidence.⁷ It has been recommended that interventions designed to address health disparities be culturally appropriate, inexpensive, user-friendly, appropriate for individuals with low health literacy levels, easily disseminated, as well as address access to care, utilize tailoring, and involve the community when possible.^{8–10} Additionally, when developing interventions for an older population, it is important to keep in mind potential declines in cognitive abilities and a tendency toward a greater reliance on making decisions based on emotions as a result of such declines.¹¹

In terms of future directions, the self-administered video and informational brochure would likely be highly disseminable and cost-effective as interventions to increase skin exams. Both appear to have increased CSE and thus skin cancer detection over baseline rates. The interventions could also be updated and enhanced over time to potentially increase effects; although, the video would require more effort to update than the brochure. Both interventions may be able to be enhanced with additional intervention components such as personalized tailoring based on participant individual characteristics (e.g., marital status, skin cancer risk factors, attitudes, and behaviors), supportive counseling, and/or other empirically-validated behavioral strategies. The current experimental intervention was a DVD-based video. This could be replaced or supplemented with additional technologies such as a web-based interactive intervention, a smartphone “app”, and so on. Of course, additional technologies may have more or less appeal and potential effectiveness and disseminability across populations.

Janda and colleagues point to the cost-effectiveness of screening men 50 years of age and older for skin cancer. Yet, there are apparently no studies examining the cost-effectiveness of *interventions* to increase skin cancer screening. Interventions such as the authors', with low dissemination costs, would likely be very cost-effective, and potentially more so among populations with lower baseline screening rates such as US men. Among the US Medicare population, non-melanoma skin cancer is one of the most costly cancers to treat because of its high prevalence.¹² It has been estimated that cancer incidence would decline by 19% and cancer mortality would decline by 29% in the US if evidence-based behavior change interventions were put into practice.¹³

Despite the publication of several rigorous randomized controlled trials such as this one demonstrating promising intervention effects on skin cancer screening and diagnosis rates, screening the general population has not been widely recommended in most countries due to the lack of randomized controlled trials focusing on skin cancer *mortality*.¹⁴ However, several recent large observational trials have provided additional empirical support for widespread population skin cancer screening programs (e.g., the German SCREEN project¹⁵) in reducing mortality.

Janda and colleagues note that routine CSE could place a burden on healthcare systems and increase detection of relatively indolent cancers. Related issues are whether individuals have access to screening by a healthcare provider and whether patients have insurance coverage for treatment of the malignancies detected. Australia and several other countries have universal healthcare coverage, and the US recently adopted the Patient Protection and Affordable Care Act, which may provide the population with more access than was available previously. However, such healthcare resources are far from unlimited.

In conclusion, Janda and colleagues have made a major contribution to the work of identifying efficacious and cost-effective interventions to increase engagement in skin cancer screening behavior, particularly among groups at high risk of morbidity and mortality such as men 50 years of age and older. Skin cancer is the most prevalent of all cancers and is increasing in incidence. Skin cancer screening is efficacious and cost-effective in detecting thinner, and therefore, more curable skin cancers. However, engagement in skin cancer screening is suboptimal in many groups, even among seemingly motivated high-risk populations. Thus, more research is needed on interventions to improve skin cancer screening and intervention dissemination approaches, especially among high-risk populations such as older men and individuals with a personal or family history of skin cancer. Several behavioral interventions have been developed and have demonstrated promise in enhancing skin cancer screening. Future research on skin cancer screening might benefit from assessing the impact of interventions on specific socioeconomic subpopulations and the incorporation of new technologies. Such approaches might enhance needed dissemination of efficacious interventions to the public.

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