Visual images for patient skin self-examination and melanoma detection: A systematic review of published studies

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Background: Early detection of skin cancer by patients is an important strategy for reducing morbidity and mortality caused by melanoma. However, the effectiveness of interventions or educational aids that use visual images to promote skin self-examination (SSE) and early melanoma detection has not been systematically investigated.

Objective: We undertook a systematic review of peer-reviewed research on SSE for skin cancer to examine the outcomes of studies that used visual images as part of their methodology. Our objective was to describe the impact of visual images on patient SSE knowledge, attitudes, behaviors, and accuracy.

Methods: Seven databases were searched resulting in 5330 citations. A total of 25 studies met the inclusion criteria.

Results: Images positively affected knowledge and self-efficacy related to SSE. Images motivated the performance of SSE and increased the accuracy of SSE and melanoma detection. The types of visual images that were effective are described and the implications are discussed.

Limitations: Articles not uncovered by the search strategy may have been unintentionally excluded. Lack of image description in the studies made specific recommendations challenging.

Conclusion: The use of visual images to promote accurate and frequent SSE is encouraged. (J Am Acad Dermatol 2013;69:47-55.)

Key words: melanoma; photograph; skin cancer; skin self-examination; systematic review; visual health communication.

The global incidence of melanoma is increasing.[1] In the United States, for 2012 it was estimated to cause 131,810 cases—76,250 invasive and 55,560 noninvasive (in situ)—and 9180 deaths.[2] Nonmelanoma skin cancers (basal and squamous cell carcinoma) are more common, but have a lower mortality. About 3.5 million nonmelanoma skin cancer cases occur annually in the United States.[3]

Early detection of melanoma is associated with better prognosis.[4] One way to promote early detection is through skin self-examination (SSE) as many melanomas are first detected by patients themselves.[5] Although randomized controlled trials would strengthen findings, existing evidence suggests SSE is associated with thinner melanomas at

Abbreviations used:

ABCD:	asymmetry, border, color, diameter
ABCDE:	asymmetry, border, color, diameter, evolution
SSE:	skin self-examination

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diagnosis[5-7] and significantly reduced mortality.[6,8] Recent evidence[9] supports SSE as important for the early detection of skin cancer.

Visual images can be highly persuasive and increase attention, recall, and recognition of information to a greater extent than text alone.[10,11] Using visual images to communicate to patients increases attention, recall, and comprehension of medical information and influences health behaviors.[12,13] When training dermatologists to accurately identify and diagnose skin cancer, exposure to multiple visual exemplars is essential to skill acquisition because this enables rapid pattern recognition.[14] Visual images hold particular significance for communicating to patients about skin cancer because the signs and symptoms of skin cancer are largely visual.[15] One common set of guidelines for SSE are the asymmetry, border, color, diameter, evolution (ABCDE) criteria (ie, asymmetry, border irregularity, color variegation, diameter >6 mm, and evolution), which typically include visual examples.[15,16]

Given the visual nature of skin cancer, its clinical significance, and the importance of SSE for early detection, we sought to systematically summarize the peer-reviewed literature on the influence of visual images on patient-related SSE skills and behaviors (ie, knowledge, attitudes, self-efficacy, behavior, and accuracy).

CAPSULE SUMMARY

- Visual images impact recall and retention of health information, and influence health behaviors.
- This systematic literature review found that visual images: increase knowledge, attitudes, and self-efficacy related to skin self-examination; increase the frequency and accuracy of skin self-examination performance; and promote melanoma detection by patients.
- Visual images should be incorporated into clinical practice when educating patients about early detection of skin cancer.

METHODS

Search strategy

A systematic review was undertaken in September 2011 using standard guidelines[17-19] to obtain peer-reviewed articles about visual images and SSE. The databases searched, and the number of articles screened from each, included: PubMeb-MEDLINE (n = 1616), EMBASE (n = 709), PsycINFO (n = 2483), Sociological Abstracts (n = 39), Social Sciences Full Text (n = 164), ERIC (n = 104), and ABI/INFORM (n = 215). In November 2012, we updated our literature search and identified an additional 5 articles. The flow of the literature search is presented in Fig 1.

Search terms were generated from the topic of the systematic review, key words from relevant articles, database thesauri, and Medical Subject Headings (MeSH) terms. Using the appropriate combinations, search terms were entered into the databases. Examples of terms included "image," "illustration," "photograph," "visual," "ABCD," "skin self-examination," and "patient education." The complete list of search terms is provided elsewhere.[20]

Full-text articles were obtained by applying the inclusion/exclusion criteria to the titles and abstracts or, as necessary, to the article text. Reference lists of included articles were also hand-searched.

Selection criteria

Studies were included if they: were published in English, were peer reviewed, focused on SSE (not other skin cancer behaviors), used visual images (photographs or illustrations) to influence SSE, and focused on the general population/laypersons. No restrictions were placed on year of publication. Exclusion criteria were: use of patient-created images, images created in the mind (ie, "visualization"), primarily video images, images for diagnosis by a physician, visuals conveying numeric information (eg, graphs), review articles or meta-analyses, or focusing primarily on special populations (eg, medical students). Studies that were exclusively qualitative (ie, focus group interviews, archival content analysis) were excluded as these were reviewed elsewhere.[20]

Data collection

The data extracted from each study included: author, title, publication date, country, study design, sample size, patient characteristics, intervention, image types used, and key outcomes relevant to images.

Critical appraisal

A modified version of the Downs and Black[21] checklist was used to determine the methodologic quality of the studies. Nine criteria were used: outcomes of interest sufficiently described, patient characteristics sufficiently described (eg, gender, age, race/ethnicity), sufficient reporting of findings (main findings clearly described), random assignment to groups, baseline comparison of groups (including adjustment for confounders), blinding or