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Clinical utility of a digital dermoscopy image-based artificial intelligence device in the diagnosis and management of skin cancer by dermatology healthcare providers, primary care providers, and non-dermatology specialized physicians

Abstract:

Background: Patients with skin lesions suspicious of skin cancer or atypical nevi frequently present to dermatology healthcare providers (DHPs), primary care providers (PCPs), and non-dermatology specialized physicians (NDSPs) who have variable training in the triage and diagnosis of skin cancers and atypical melanocytic nevi.

Objective: To evaluate the clinical utility of a digital dermoscopy image-based artificial intelligence algorithm (DDI-AI device) on the diagnosis and management of skin cancers by DHPs, PCPs, and NDSPs.

Methods: Forty-three United States licensed DHPs, PCPs, and NDSPs evaluated 50 clinical images and 50 digital dermoscopy images (DDIs) of the same skin lesions (25 malignant and 25 benign), first without and then with knowledge of the DDI-AI device output. Participants selected whether they thought the lesion was likely benign or malignant.

Results: The overall management sensitivity for participants was 94.2% with the DDI-AI device, 84.1% with DDI, and 72.9% with clinical images; overall diagnostic sensitivity for participants was 87.0%, 79.6%, and 64.7%, respectively. Diagnostic specificity increased over baseline to 75.0% with the DDI-AI device, while no significant difference was observed in management specificity. DHPs had a statistically significant higher baseline clinical (68.5% sensitivity versus 59.6%) and dermoscopy (84.3% sensitivity versus 73.3%) performance than PCPs and NDSPs. DHPs also achieved the highest diagnostic performance (87.7% sensitivity versus 86.2%) when using the DDI-AI device.

Conclusion: The use of the DDI-AI device may quickly, safely, and effectively improve skin cancer management and diagnosis when used by DHPs, PCPs, and NDSPs, independent of variable training and clinical experience.

Biography

Renata Block, PA-C has been practicing in Dermatology since 2003 and is obtaining her Doctor in Medical Science (DMSc) at Southern Illinois University School of Medicine. She is the Past President of the Society of Dermatology Physician Associates and is an advisory editorial board member of Dermatology Times.