

BENEFITS AND RISKS WITH DIGITAL DERMOSCOPY AND TELEDERMOSCOPY

Akademisk avhandling

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Avhandlingen baseras på följande delarbeten

- I. Börve A, Dahlén Gyllencreutz J, Terstappen K, Johansson Backman E, Aldenbratt A, Danielsson M, Gillstedt M, Sandberg C, Paoli J. *Smartphone Teledermoscopy Referrals: A Novel Process for Improved Triage of Skin Cancer Patients*. Acta Derm Venereol 2015; 95: 186–190.
- II. Dahlén Gyllencreutz J, Paoli J, Bjellerup M, Bucharbajeva Z, Gonzalez H, Nielsen K, Sandberg C, Synnerstad I, Terstappen K, Wennberg Larkö AM. *Diagnostic Agreement and Interobserver Concordance with Teledermoscopy Referrals*. J Eur Acad Dermatol Venereol. 2017; 31: 898-903.
- III. Dahlén Gyllencreutz J, Johansson Backman E, Terstappen K, Paoli J. *Teledermoscopy images acquired in primary health care and hospital settings - a comparative study of image quality*. J Eur Acad Dermatol Venereol. 2017 Aug 29. doi: 10.1111/jdv.14565. [Epub ahead of print]
- IV. Dahlén Gyllencreutz J, Bengtsson Boström K, Terstappen K. *Does it look like melanoma? A pilot study of the effect of sunless tanning on dermoscopy of pigmented skin lesions*. Br J Dermatol. 2013; 168: 867-70

**SAHLGRENKA AKADEMIN
INSTITUTIONEN FÖR KLINISKA VETENSKAPER**



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Abstract

The increasing incidence of malignant melanoma and non-melanoma skin cancer (NMSC) makes it necessary to optimize the management of patients with suspicious skin lesions, from triaging, to establishing a diagnosis and planning treatment. The purpose of this thesis is to investigate the use of teledermoscopy (TDS) as a way of achieving such an optimization, as well as to study safety aspects of digital dermoscopy and teledermoscopy while pointing out risks and pitfalls so that they can be avoided.

In study I, smartphone TDS was compared with traditional paper referrals. The outcome of 772 patients referred by TDS from 20 primary health care (PHC) centres to two dermatology departments was compared to that of 746 patients referred without images. TDS provided faster management of patients with skin cancer and more accurate prioritisation. In study II, 80 TDS referrals and 77 paper referrals were evaluated by six dermatologists resulting in moderate interobserver concordance. The diagnostic agreement with TDS was higher for several diagnoses. It also proved easier to plan for surgery at the first visit and to resend referrals with clearly benign lesions. However, a few referrals with malignant lesions were incorrectly resent. In study III, two dermatologists compared the image quality of 172 dermoscopic images acquired in PHC with images of the same tumours obtained at the department of dermatology. The PHC images were of slightly lower quality but the difference was not statistically significant. No difference was found in the ability to correctly diagnose the lesions. In study IV, dermoscopic images of skin lesions, obtained before and after the use of a sunless tanning product containing dihydroxyacetone (DHA) were compared. For facial lesions, there were significantly more equivocal lesions after the use of DHA. A follicular pigmentation was often found, somewhat mimicking that of lentigo maligna. In conclusion, TDS can result in safer, more efficient management of patients with skin lesions of concern, earlier treatment of patients with malignant lesions and decreasing the need for unnecessary visits to a dermatologist. TDS images obtained in PHC are of similar quality to those obtained by trained dermatologists. When triaging TDS referrals, dermatologists should avoid resending referrals for clinically atypical melanocytic lesions and take into consideration the use of pigment-altering substances such as DHA.

Keywords: Melanoma, non-melanoma skin cancer, dermoscopy, teledermoscopy, teledermatology, e-health