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TELESPOT Project, a Belgian teledermoscopy system in primary healthcare centres for skin cancer early detection : Prospective Preliminary Results and Satisfaction Evaluation

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Introduction

The incidence of skin cancer has been steadily increasing for years[1]. This situation has led to a workload for primary healthcare centres (PHCs) and dermatologists, hampering early diagnosis and care[2]. Teledermoscopy allows standardized and reproductible cutaneous tumour image analysis with high sensitivity and specificity[3]. TELESPOT project (Teledermoscopy Smartphone-based Pigmented lesion diagnosis Online Taskforce) provides rapid diagnosis and speed up patient flow (figure 1)[4].

Material and Methods

Smartphone Application Development The data processing is made with open source program and the General Data Protection Regulation is respected.

Smartphone Dermoscopic Device a smartphone (iPod® Touch 7; Apple, Cupertino, CA) and a compatible handheld dermatoscope (Hein® ic1; Heine Optotechnik, Herrsching, Germany) were provided to each PHC.

Trainings of PHCs Each PHC were aware to skin cancer demographic, clinical and dermoscopic features; trained to acquire macroscopic and dermoscopic pictures and fill questionnaire.

Project Settings 7 PHCs were enrolled, in 4 different french Belgian districts.

Screening Items Quality of acquisition, evolution of lesion over time, nature of lesion, diagnosis, management priority, histopathology of high priority lesions, time to face-to-face visit (and surgery if necessary) for high priority lesions.

Satisfaction Scores General practitioners (GPs) and patients satisfaction were assessed with a modified Likert scale.

Fig. 1 Patient workflow

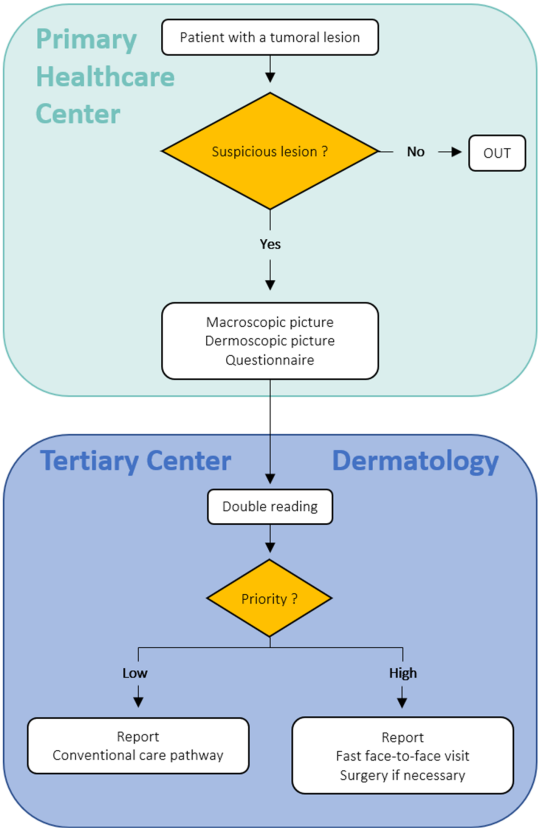

Fig. 2 Diagnostic categories

Diagnostic category	*n* = 325 (%)
Actinic keratosis	12 (3,7)
Angioma	11 (3,8)
Atypical nevus	9 (2,6)
Basal cell carcinoma	12 (3,7)
Benign nevus	120 (36,9)
Dermatofibroma	5 (1,5)
Epidermoid carcinoma	8 (2,5)
Lentigo simplex	19 (5,8)
Other benign lesions	20 (6,1)
Other malignant lesions	1 (0,3)
Seborrheic keratosis	92 (28,3)
Melanocytic lesion highly suspected of malignancy	16 (4,8)
- Congenital nevus	- 2 (0,6)
- Spitz/Reed nevus	- 3 (0,9)
- Dysplasic nevus	- 1 (0,3)
- In situ melanoma	- 6 (1,8)
- Superficial spreading melanoma	- 4 (1,2)

1. Belgian Cancer Registry Group. Cancer in an ageing population: Belgium 2004-2016. Brussels: Belgian Cancer Registry; 2018. p. 65-74

2. Coates S, Kvedar J, Grandstein R. Teledermatology: from historical perspective to emerging techniques of the modern era, part I: history, rationale and current practice. J Am Acad Dermatol. 2015;72(4):563-74

3. Vestergaard T, Pradad S, Schuster A et al. Diagnostic accuracy and interobserver concordance: teledermoscopy of 600 suspicious skin lesions in Southern Denmark. J Eur Acad Dermatol Venereol. 2020. http://doi.org/10.1111/jdv.16575

4. Damsin T, Canivet G, Jacquemin P et al. Value of teledermatology in primary healthcare centers: preliminary results of the TELESPOT project in Belgium. Dermatol Ther (Heidelb). 2020;10:1405-13

Results

Satisfactions Scores The overall satisfaction score was 9.4/10 for GPs and 8.8 for patients.

Screening Results We analysed 325 lesions from 227 patients (figure 2). Mean age was 51 years with a female dominance (3:2). 3% of acquired pictures must be repeated because of poor quality. Low priority management was advised for 88% of lesions. Melanoma represented 26% of high priority lesions. Median time to face-to-face visit (and surgery if needed) for high priority lesions was 12 days, that is seven times faster in comparison with conventional care pathway.

Conclusion

The preliminary evaluation shows TELESPOT project as a useful tool to preselect patient with suspicious cutaneous lesion and provide rapid access to specialized care. One limitation to our system remains the initial triage by first-line medicine, witch may miss uncommon cancer clinical presentation (e.g. amelanotic melanoma).