

Supplemental material

Supplemental methods

Classification of difficult-to-reach location

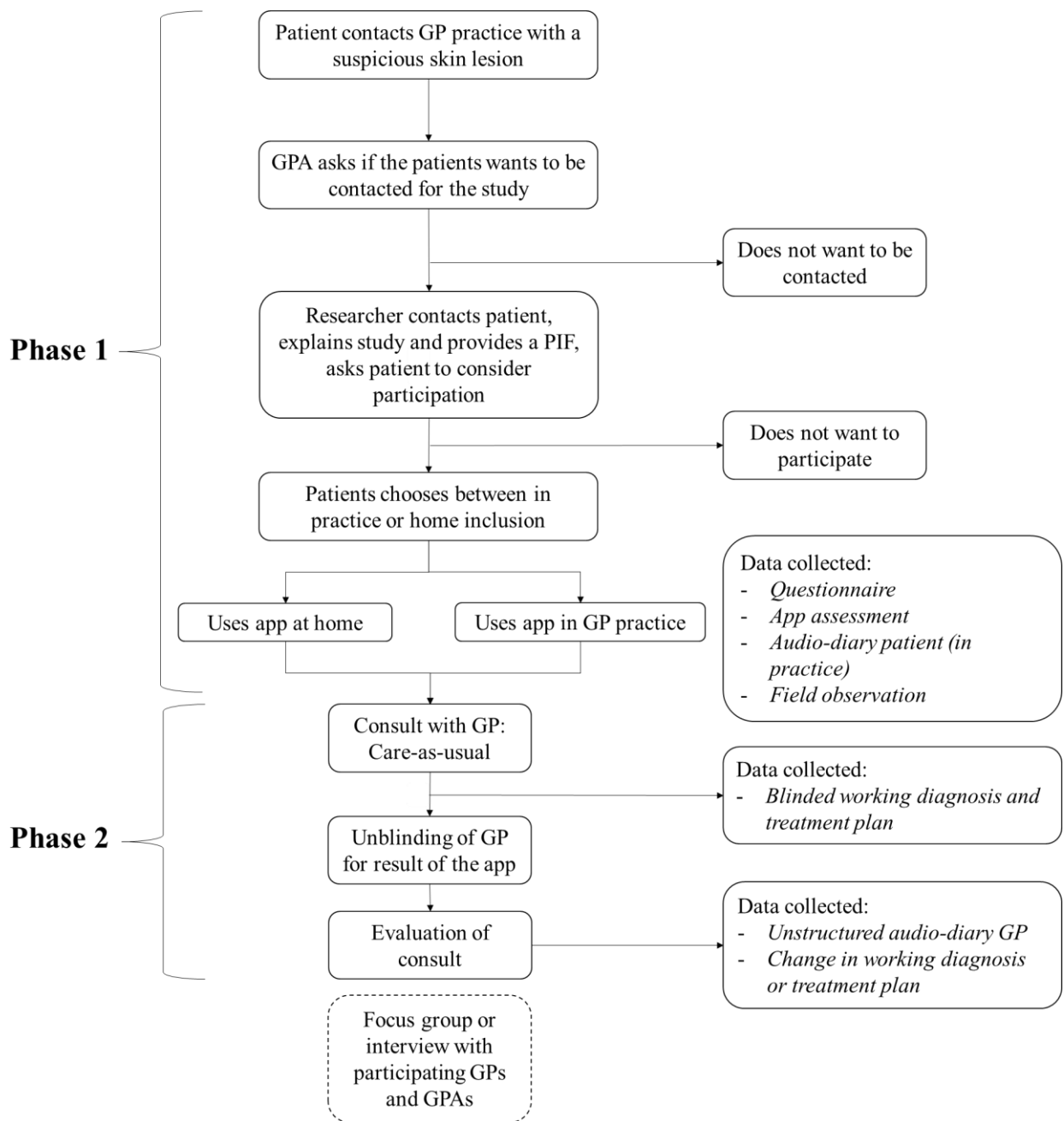
Lesions were classified as on a difficult-to-reach location or an easily reachable location. A location was difficult to reach if it was on the back of the thighs, the buttocks, the back, the neck, the head, the upper region of the thorax and the backside of the upper arms and shoulders.

Topic list focus groups and semi-structured interview

We present a summarized versions of the topic list for the focus groups and semi-structured interview:

- How do GPs and GP assistants reflect on participating in the study
- How do GPs and GP assistants reflect on the impact of the app inside and outside of the study? Does the fact that they're participating in the study impact other consultations, even when they aren't using the app?
- What do GPs think about using the app outside of the study? Will they recommend the app to patients or friends outside of the study?
- Visceral experience of using the app in patient interaction
- Emotional experience of using the app in patient interaction
- Change in decision-making as a result of using the app
- Change in relationship with patient when mediated through technology
- Change in practices when mediated through the app

Supplemental figure 1. Study design.



Abbreviations: GP; general practitioner, GPA; doctor's (GPs) assistant, PIF; Patient information folder.

Supplemental table 1 Criteria for successful participation by the patient and general practitioner (GP).

Phase 1: Patient	Phase 2: General practitioner
Usage of the app and filling in of the questionnaire	Consultation by the general practitioner and filling in of the questionnaire
1.Filled in entire questionnaire	1.Blinding successful
2.App assessment successful (with or without help)	2.Filled in a blinded and unblinded diagnosis and treatment plan

Participation per phase was successful if both criteria were met.

Supplemental table 2. Description of the collected qualitative data

Qualitative data	
Field observations made by the researchers	
Of the patient (n)	19
Of a consultation by the GP (n)	21
Audio-diaries	
Recorded by the patient (n)	8
Recorded by the GP (n)	23
Focus groups	
Participants of focus group 1	2 GPs, 2 GPAs
Participants of focus group 2	2 GPs, 1 GPA
Semi-structured interview	
Participants	1 GP

Abbreviations: GP; general practitioner, GPA; doctors assistant.

Supplemental table 3. Binary classification of diagnoses for calculation of the sensitivity and specificity.

Diagnosis	Classification
LS/SL	Low
Dermatofibroma	Low
SK	Low
Vascular (hemangioma, pyogenic granuloma, telangiectasia)	Low
Benign nevus	Low
Lichen planus-like keratosis	Low
Atypical nevus if considered clinically benign	Low
Atypical nevus if considered malignant	High
BCC	High
cSCC	High
MM	High
LM	High
BD	High
AK	High
Keratoacanthoma	High

Classification reflects how the final diagnosis was made into a binary category.

Abbreviations: LS; lentigo simplex, SL; solar lentigo, SK; seborrheic keratosis, BCC; basal cell carcinoma, cSCC; cutaneous squamous cell carcinoma, MM; malignant melanoma, LM; lentigo maligna, BD; Bowens disease, AK; actinic keratosis.

Supplemental table 4. Binary classification of the assessment of the GP based on a combination of the working diagnosis, differential diagnosis and treatment plan.

Working diagnosis	Differential diagnosis	Treatment plan	Classification GP
Sebacous cyst	Only benign	Excision or expectant	Low
Dermatofibroma	Only benign	Expectant	Low
	Only benign	Biopsy, excision or referral*	High
	Includes malignancy	Expectant	Low
	Includes malignancy	Biopsy, excision or referral*	High
Halo nevus	Only benign	Expectant	Low
	Only benign	Biopsy, excision or referral*	High
	Includes malignancy	Expectant	Low
	Includes malignancy	Biopsy, excision or referral*	High
SK	Only benign	Expectant	Low
	Only benign	Biopsy, excision or referral*	High
	Includes malignancy	Expectant	Low
	Includes malignancy	Biopsy, excision or referral*	High
Verruca vulgaris	Only benign	Expectant	Low
	Only benign	Biopsy, excision or referral*	High
	Includes malignancy	Expectant	Low
	Includes malignancy	Biopsy, excision or referral*	High
Solar lentigo	Only benign	Expectant	Low
	Only benign	Biopsy, excision or referral*	High
	Includes malignancy	Expectant	Low
	Includes malignancy	Biopsy, excision or referral*	High
Benign nevus	Only benign	Expectant	Low
	Only benign	Biopsy, excision or referral*	High
	Includes malignancy	Expectant	Low
	Includes malignancy	Biopsy, excision or referral*	High
Atypical nevus	Only benign	Expectant	Low
	Only benign	Biopsy, excision or referral*	High
	Includes malignancy	Expectant	Low
	Includes malignancy	Biopsy, excision or referral*	High
BCC	NA	Biopsy, excision or referral	High
cSCC	NA	Biopsy, excision or referral	High
MM	NA	Biopsy, excision or referral	High

Classification reflects how the working diagnosis of the GP in combination with the differential diagnosis and treatment plan was made into a binary high or low risk for calculations of the sensitivity and specificity. There were no other working diagnoses by the GP then the abovementioned options. Abbreviations: SK; seborrheic keratosis, BCC; basal cell carcinoma, cSCC; cutaneous squamous cell carcinoma, MM; malignant melanoma, LM; lentigo maligna, BD; Bowens disease, AK; actinic keratosis, NA; Not applicable.

*If send for pathological examination and not for cosmetic reasons

Supplemental table 5. Exploratory subgroup analyses of the accuracy of the app when stratified for sex, self-reported skin type, GP practice, lesion location and difficult to reach locations.

	Proportion of correctly identified benign lesions, % (n/N)	Proportion of correctly identified (pre)malignant lesions, % (n/N)
Sex		
Male	92.3 % (12/13)	100% (4/4)
Female	72.7% (16/22)	83.3% (5/6)
Self-reported skin type		
White	78.1% (25/32)	88.9% (8/9)
Light brown	100% (2/2)	100% (1/1)
Dark	100% (1/1)	NA (0/0)
GP practice		
Practice 1	76.9% (10/13)	100% (4/4)
Practice 2	75% (9/12)	100% (2/2)
Practice 3	90% (9/10)	75% (3/4)
Lesion location		
Head and neck	80% (4/5)	83.3% (5/6)
Back	50% (3/6)	100% (2/2)
Chest and abdomen	88.9% (16/18)	100% (1/1)
Upper and lower extremities	83.3% (5/6)	100% (1/1)
Difficult to reach location		
Yes	72.7% (16/22)	88.9% (8/9)
No	92.3 % (12/13)	100% (1/1)

Abbreviations: GP; general practitioner, NA; Not applicable.

Supplemental table 6. Changes in treatment of the general practitioner based on the app's assessment.

Final diagnosis	GP Blinded	App	Treatment blinded	New treatment plan
AK	High	High	N ₂ and control appointment	Control and consider biopsy
AK	High	High	N ₂	Referral dermatologist
AK	Low	High	Expectant	Biopsy*
SK	Low	High	Expectant, possibly N ₂	Excision
Nevus	Low	Low	Referral	Control appointment

Table describing the impact of the assessment of the app on the treatment plan of the general practitioner. Abbreviations: GP; general practitioner, SK; seborrheic keratosis, AK; actinic keratosis, N₂; treatment with liquid nitrogen.

*GP initially wanted to perform a biopsy. However, on request of the patient referred them to a dermatologist so the dermatologist could do the biopsy