Cancer Association of South Africa (CANSA)

Fact Sheet and
Position Statement
on the use of
Apps to Diagnose Skin Cancer

Introduction

Everyone has one or more 'apps' on their smartphone these days. Television shows, web sites, major multinational corporations, even some taxi firms conduct their business through an iPhone app - but what are they?

[Picture Credit: Smartphone]

'App' is an abbreviated form of the word "application". An application is a software programme which is designed to perform a specific function directly for the user or, in some cases, for another application programme, or used to enhance existing functionality, hopefully in a simple, more user-friendly way.

Take one of today's modern smartphones. They all come with powerful web browsers, meaning one can do pretty much anything one can do on a desktop computer in a smartphone's browser.
(What is an 'App'?)

To Use or Not to Use – That is the Question

Over 100 000 medical and health apps for mobile digital devices have been listed in the Apple App Store and Google Play. They represent diverse opportunities for lay people to access medical information and track their body functions and medical conditions. As yet, however, few critical social researchers have sought to analyse these apps.

Research suggests that these apps should be used with great caution by both lay people and practitioners. The lack of verifiable information provided about the evidence or expertise used to develop these apps is of major concern.

The apps are of very variable quality, ranging from those that appear to have the support and input of distinguished medical experts, specialty groups or medical societies to those that offer little or nothing to support their knowledge claims. While at one end of the spectrum one can see apps as a delivery system for information which has been subject to

the conventional forms of academic review, at the other extreme, one sees apps developed by entrepreneurs with interests in many topics outside medicine, with little input from medical sources, or with inadequate information to ascertain what the sources might be.

The lack of information provided by many app developers also raises questions about how users can determine the presence of conflicts of interest and commercial interests that might determine content.

CANSA was made aware of the availability of various apps that can be loaded onto one's smartphone, which apparently has the ability to diagnose cancerous changes in moles on the skin. There are apparently various such apps on the market.

The question that arises is: should one use an 'app' to reach a medical diagnosis that may have serious implications?
(Medical Diagnosis Apps).

The Use of Apps to Diagnose Melanoma

In research conducted by Wolf, *et al.*, 2013), the sensitivity, specificity, and positive and negative predictive values of 4 smartphone applications designed to aid non-clinician users (members of the lay public) in determining whether their skin lesion is benign or malignant was tested.

[Picture Credit: Melanoma I]

The results showed that the sensitivity of the 4 tested 'apps' ranged from 6.8% to 98.1%; specificity, 30.4% to 93.7%; positive predictive value, 33.3% to 42.1%; and negative predictive value, 65.4% to 97.0%. The highest sensitivity for melanoma diagnosis was observed for an application that sends the image directly to a board-certified dermatologist for analysis; the lowest, for applications that use automated algorithms to analyse images.

The researchers concluded that the performance of smartphone applications in assessing melanoma risk is highly variable, and 3 of 4 smartphone applications incorrectly classified 30% or more of melanomas as 'unconcerning'. Reliance on these applications, which are not subject to regulatory oversight, in lieu of medical consultation can delay the diagnosis of melanoma and harm users.
(Wolf, *et al.*, 2013).

In a study published in the *Journal of the European Academy of Dermatology and Venereology* during 2015, researchers tested the accuracy of an 'app' through the analysis of 195 pictures of skin lesions. The researchers concluded that the algorithm might have some potential in the future for the evaluation of melanocytic nevi, but is to date insufficient to detect melanoma accurately**.**

Researched and Authored by Prof Michael C Herbst
[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health]
Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]
April 2017   Page 2

In another study published in the *JAMA Dermatology*, Dr Joel A Wolf and colleagues from the University of Pittsburgh, PA, analysed four smartphone 'apps' that claim to detect skin cancer.

In general the 'apps' were found to incorrectly categorise a large number of skin lesions. Even the most accurate 'app' missed almost 30% of melanomas, diagnosing them as low-risk lesions.

Of course, some health 'apps' have their uses. It is great to be able to constantly monitor blood pressure and keep track of one's weight or what one is eating. But when it comes to a diagnosis of skin cancer, most professionals believe that relying on a smartphone 'app' for detection is worrying. "If patients are using one of these [apps] to say 'melanoma' or 'not melanoma,' they're going to get in trouble. This can't be a person's only dermatologist." Ken Beer, MD, a dermatologist in West Palm Beach, FL, told *The Wall Street Journal*.
(Medical News Today).

Using Apps for Medical Purposes may Have Dire Consequences
After compiling evidence, and debating whether CANSA can or should support the use of such apps, it was resolved that it would be totally irresponsible of CANSA to support the use of any such 'app'.

In the event of a false negative result, someone may be under the impression that he/she is fine and has nothing to worry about a particular mole on their body. By the time that an accurate diagnosis of a malignant melanoma is made, there may already be metastases (spread of the melanoma to other parts of the body) with fatal consequences.

[Picture Credit: Melanoma II]

BENIGN   MALIGNANT

The possibility of a false positive result is just as problematic. For someone to receive the diagnosis that a mole has changed and is now a malignant melanoma can be very traumatic. Danish researchers have found that by the time such an individual has seen a dermatologist (skin specialist), had the mole removed, waited a week or longer for the laboratory results, and then to be informed that there was nothing wrong with the mole, irreparable psychological trauma may already have resulted. Someone described it as "… it's a false alarm … a wrong diagnosis … a physically and emotionally draining event that can do terrible damage to body, mind and spirit".
(Cancer Defeated).

The Fotofinder Dermoscope
The robust and versatile Fotofinder Dermoscope system is a reliable companion through the hectic everyday life in the practice right from day one. It provides one with rapid skin cancer screening and in the long-term video documentation and the analysis of moles, in fluorescence diagnostics, in hair consultations and in the follow-up documentation of all skin, hair and nail diseases.

FotoFinder Dermoscope underlines specialist competence: It can detect changes in the skin early and avoid unnecessary excision of skin areas.

The FotoFinder Dermoscope at a glance:
- It is claimed as the world's leading system for digital epiluminescence microscopy and video documentation
- Complete diagnosis spectrum from melanomas to basal-cell carcinomas
- The best and clearest images in Full HD live, with immersion and polarisation
- The only system for large panoramic images and dermoscopic images with just one camera
- The only system with seamlessly integrated Full HD live image in the software
- Tried-and-tested and scientifically proven diagnosis
- Provision of tools for special consultations covering all aspects of skin and hair

(Fotofinder Demoscope).

Position of the Cancer Association of South Africa
The Cancer Association of South Africa (CANSA), therefore, wishes to advise that:
- No one should ever trust using a free 'app' on a cell phone (mobile smartphone) for purposes of reaching a medical diagnosis

CANSA further advises that:

- Individuals should rather visit one of CANSA's Offices where there is a Fotofinder Dermascope (a thoroughly tested and registered scientific apparatus) to have moles on their skins examined

- Alternatively, individuals should make an appointment with a dermatologist (skin specialist), thereby ensuring to be exposed to a sound and scientific skin examination resulting in an accurate diagnosis

Medical Disclaimer
This Fact Sheet and Position Statement is intended to provide general information only and, as such, should not be considered as a substitute for advice, medically or otherwise, covering any specific situation. Users should seek appropriate advice before taking or refraining from taking any action in reliance on any information contained in this Fact Sheet and Position Statement. So far as permissible by law, the Cancer Association of South Africa (CANSA) does not accept any liability to any person (or his/her dependants/estate/heirs) relating to the use of any information contained in this Fact Sheet and Position Statement.

Whilst the Cancer Association of South Africa (CANSA) has taken every precaution in compiling this Fact Sheet and Position Statement, neither it, nor any contributor(s) to this Fact Sheet and Position Statement can be held responsible for any action (or the lack thereof) taken by any person or organisation wherever they shall be based, as a result, direct or otherwise, of information contained in, or accessed through, this Fact Sheet and Position Statement.

Researched and Authored by Prof Michael C Herbst
[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health]
Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]
April 2017   Page 4

References:

Cancer Defeated
http://www.cancerdefeated.com/this-major-risk-could-be-more-dangerous-than-cancer-itself/1155/

Fotofinder Demoscope
http://www.fotofinder.de/produkte/dermoscope/?L=1

Medical Diagnosis Apps
https://simplysociology.wordpress.com/2015/05/03/medical-diagnosis-apps-study-findings/

Medical News Today
http://www.medicalnewstoday.com/articles/285751.php

Melanoma I
http://samadimd.com/cancer/2015/4/4/utah-researchers-may-have-found-melanoma-cure

Melanoma II
http://www.skincancer.org/skin-cancer-information/melanoma

Smartphone
http://www.alltechbuzz.net/top-10-best-smartphones-of-2014/

What is an 'App'?
http://searchmobilecomputing.techtarget.com/definition/app

Wolf, J.A., Moreau, J.F., Akilov, O., Patton, T., English III, J.C., Ho, J. & Ferris, L.K. 2013. Diagnostic Inaccuracy of Smartphone Applications for Melanoma Detection. *JAMA Dermatol,* 2013: 149(4):422-426. Doi:10.1001/hamadermatol.2013.2382.

Researched and Authored by Prof Michael C Herbst
[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health]
Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]
April 2017   Page 5