PALLIATIVE MEDICINE AND SMARTPHONES: AN OPPORTUNITY FOR INNOVATION?

Nwosu AC, Mason S. BMJ Supportive & Palliative Care 2012;2:75-77
doi:10.1136/bmjspcare-2011-000151

Published Online First 15 November 2011

Authors

Dr Amara Nwosu
Marie Curie Palliative Care Institute Liverpool (MCPCIL)
Speke Road
Liverpool
L25 8QA

Tel: 001 44 (0)151 801 1498
Fax: 001 44 (0) 151 801 1458

Email: amaranwosu@doctors.org.uk

Dr Stephen Mason
Marie Curie Palliative Care Institute Liverpool (MCPCIL)
Speke Road
Liverpool
L25 8QA

Key words:

smartphone, palliative care, phone, mobile, telemedicine, technology

Word count:

1056
ABSTRACT

Background

The use of smartphones and their software applications (apps) are providing health professionals with opportunities to integrate technology into clinical practice. The number of work-related apps available to health professionals is increasing. Certain specialities, such as orthopaedics, have a large number of resources available for health professionals. However, the availability of apps specific to palliative medicine is, as yet, limited.

Objectives

To review all smartphone apps available to the five most popular operating systems (iPhone, Blackberry, Android, Palm and Windows) which are targeted to health professionals within palliative medicine.

Methods

Each smartphone app store was systematically searched with a combination of the following keywords: palliative, pain, cancer, symptoms, medicine. Identified apps were purchased and tested if their title and/or description showed relevancy to palliative care.

Results

Six apps specific to palliative medicine were identified across all five operating systems. These consisted of blog orientated apps (Pallimed and Geripal), an app containing guidelines from eight cancer networks (PalliApp), an education based app (Palliative Care) and opioid dose converter apps (eOpioid and PalliCalc).

Conclusions

There is a lack of palliative medicine specific resources available for smartphones. No literature currently exists to examine the potential benefits of mobile technology on learning, clinical practice and professional development. This is an opportunity for further research and development. Academic institutions could partner with technological developers to improve access to, and dissemination of key information for practice.
Considered development of mobile technology has the potential to improve patient care, data sharing and education within the speciality.
BACKGROUND

As mobile technology is continues to improve, new opportunities to integrate technology in the support of clinical practice have developed.(1) The mobile phone is a standard piece of technology which has become commonplace in health professionals pockets.(2) The emergence of third generation technology in 2001 has improved the capabilities and performance of mobile technology. A smartphone is a combination of a mobile phone, personal digital assistant (PDA) and a mobile computer.(3;4) The most popular smartphones are the iPhone and Blackberry devices.

An online survey by d4¹ of 474 health professionals in the United Kingdom (UK) showed that 81% use a smartphone for work-related reasons, such as communicating with colleagues (82%), accessing information (46%) and running work-related apps (18%).(4)

An app is a piece of software designed to run on computers, phones, or other electronic devices.(4) The market for apps aimed at doctors is increasing. Generic resources such The Oxford Handbook for Clinical Medicine and the British National Formulary (BNF) are available. The BMJ Group have various apps to help doctors, such as the Doctor’s Toolbag, Best Practice decision support and the Differential Diagnosis apps.(5) Several specialities have embraced the use of mobile technology. For example, orthopaedics have 61 custom made smartphone apps available(6) and the Royal College of Anaesthetists use a mobile version of their evidence log for trainees.(7)

Both health and academic institutions are beginning to embrace the possibilities of mobile technology in supporting practice and development. The Welsh Deanery has invested

¹d4 is a non-profit organisation which aims to increase the use of mobile technology in the National Health Service.
£500,000 in providing their foundation house officers with smartphones pre-loaded with iDoc, which is a compendium of 20 medical textbooks.\(^8,9\) In 2010, Leeds University issued more than 500 medical students with iPhones to enable access to online textbooks.\(^10\)

The availability of apps specific to palliative medicine is, as yet, limited. The aim of this article is to review all smartphone apps available to the five most popular operating systems (iPhone, Blackberry, Android, Palm and Windows) which are targeted to health professionals within palliative medicine.

**METHODS**

Each of the five current popular smartphone operating systems has a respective app store to browse and download software for use on the devices. Each app store was systematically searched using a combination of the following terms: palliative, pain, cancer, symptoms, medicine. Only apps written in the English were included. To ensure no apps were overlooked, apps listed on each respective database were examined alphabetically and the description read if the title suggested relevancy to palliative medicine.

**RESULTS**

The search of the iPhone app store yielded a total of 6 apps, and a search of the Android app store yielded 2 apps (these were duplicates of apps available for the iPhone). No Blackberry, Palm or Windows apps were identified from the search strategy. The results of the search are presented in Table 1.
Table 1: Description of reviewed smartphone apps

<table>
<thead>
<tr>
<th>Name</th>
<th>Author(s)</th>
<th>Description</th>
<th>Platform</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallimed: A hospice and palliative medicine blog</td>
<td>Dr Drew Rosielle</td>
<td>Pallimed is the app version of the palliative medicine internet blog. (11) Pallimed contributors provide their opinions on journal articles and news stories relevant to palliative care. The articles appear in time order providing the user with topical information related to palliative medicine. Focused on outputs in North America, Pallimed features an arts section which provides commentary on music, television, film and general media of interest to palliative care. The app is limited by the absence of a function to search for specific topics on the blog.</td>
<td>iPhone</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Dr Dale Lapu</td>
<td></td>
<td>Android</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Suzana Makowski</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Christian Sinclair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Holly Yang</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GeriPal: A Geriatrics and Palliative Care Blog</td>
<td>Dr Alex Smith</td>
<td>GeriPal is the app version of an internet blog that aims to be a forum for discussion of news and research relevant to geriatric medicine and palliative care. (12) The blog was awarded the title of the best medical blog</td>
<td>iPhone</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Dr Eric Widera</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Selected articles from North American journals appear on the app in time order in a style similar to Pallimed. The focus on geriatric care may limit the interest of users working in other specialities. Further, users are unable to search for articles or post comments whilst using the app version of the blog site.

<p>| PalliApp | Dr Max Watson | PalliApp is the iPhone version of the Palliative Network Guidelines (PANG 2011) which have been written and reviewed by palliative care staff from eight cancer networks. (13) The PANG has also been endorsed by the Palliative Care Implementation Board in Wales and the Royal College of General Practitioners. PalliApp provides symptom and disease specific guidelines for a range of diseases. The app offers a search feature enabling the user to search the guidelines. PalliApp provides information on the completion of the Liverpool Care Pathway and the Gold Standards Framework. The ease of navigation to different sections of the app is | iPhone £2.99 |</p>
<table>
<thead>
<tr>
<th>Application</th>
<th>Developer</th>
<th>Description</th>
<th>Platform</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palliative Care</td>
<td>Simpaddico llc</td>
<td>Palliative care is an app designed to facilitate learning of key issues of palliative care. Information appears in the style of flash cards, with each card providing a brief discussion of key issues around a particular subject (e.g. constipation, definition of total pain). Users can search for topics and save their favourite cards to enable quick access at a later point. The content appears aimed at medical and nursing students, or newly qualified health professionals with little experience of palliative medicine.</td>
<td>iPhone, Android</td>
<td>£1.99</td>
</tr>
<tr>
<td>eOpioid</td>
<td>SentientWareTM</td>
<td>eOpioid is an opioid dose converter for the iPhone. Users are able to compare equivalent doses of commonly used opioids and different route. The app gives users the option to determine the equivalency percentage for the opioid calculations. The app features a function to calculate patient controlled analgesia (PCA) doses and also provides users with information</td>
<td>iPhone</td>
<td>£2.99</td>
</tr>
</tbody>
</table>
of specific long and short acting preparations which can be prescribed depending on the opioid calculation.

| PalliCalc | Dr Ian Back | PalliCalc is an opioid dose convertor affiliated to PalliApp. The app enables the user to calculate equivalence opioid dosages for different routes of medication, regular and as-required (PRN) doses. The app is quick and simple to use and works on traditional conversion ratios. | iPhone | £0.59 |
DISCUSSION

Portable mobile technology has the potential to impact upon the education of clinicians regarding the practice of palliative medicine. However, only six palliative medicine smartphone apps of various functions were identified from this review. Compared to other specialities the availability of mobile technology specific to palliative medicine is limited. Although it is reasonable to suggest that smartphones have the potential to improve knowledge and therefore patient care, no evidence of effect exists as yet.

It would be possible for academic institutions to partner with technological developers to improve access to, and dissemination of information. Areas for development could include the following:

- Development of mobile educational logbook for palliative medicine trainees and consultants
- Regular audio and video podcasts of educational material, topical news summaries and journal articles
- Streaming of presentations from national and international conferences
- Development of patient record systems
- Tracking hospitalised palliative patients
- Communication in different languages
- Development of drug formulary databases

Other uses for smartphones include the ability to use the devices as portable media players. This allows the user to watch or listen to pertinent Podcasts (a series of digital audio or videos files which are released episodically from the internet). Various medical and surgical
journals now provide free podcasts with each edition. Although this was not the main focus of this review we were unable to identify any podcasts specific to palliative medicine. Further, social network websites such as Facebook and Twitter are readily accessible from mobile devices and provide users with an opportunity to quickly share information and educational resources e.g. BMJ Supportive and Palliative Care (14) and Twitter Journal Club. (15)

There are, however, a number of potential problems. For existing apps, concerns surrounding the ongoing debate on the accuracy of opioid equivalence and variations in practice (16) may hinder the general acceptability of opioid dose converter apps. Concerns on the “quality” of the information accessed may be raised. However, recognised organisations such as the Association of Palliative Medicine (APM) and the National Council for Palliative Care (NCPC) could develop or approve apps to assist clinicians on quality control and ensure regulation and monitoring of information.

Other concerns include potential confidentiality issues for patients and staff, especially in the event of loss or theft of the device. (4) The use of smartphones in clinical areas may be viewed negatively by patients, relatives and staff, if their use is misinterpreted as social rather than work-related. Limitations on network and mobile internet coverage in workplaces may limit the use of many smartphone apps.

**CONCLUSION**

No literature currently exists to examine the potential benefits of mobile technology on learning, clinical practice and professional development. This is an opportunity for further
research and development. Accordingly, the considered development of mobile technology has the potential to improve patient care, data sharing and education within the speciality.

**FUNDING**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

**LICENCE FOR PUBLICATION**

The Corresponding Author has the right to grant on behalf of all authors and does grant on behalf of all authors, an exclusive licence (or non exclusive for government employees) on a worldwide basis to the BMJ Publishing Group Ltd to permit this article (if accepted) to be published in BMJ Supportive and Palliative Care and any other BMJPGL products and sublicences such use and exploit all subsidiary rights, as set out in our licence (http://group.bmj.com/products/journals/instructions-for-authors/licence-forms).

**COMPETING INTEREST**

None declared.

**ETHICS**

This study is an educational review and does not involve human subjects. Therefore, ethics committee approval was not deemed to be necessary.


http://www.geripal.org [date accessed September 2011]


(13) BMJ Supportive and Palliative Care Facebook page.  
http://www.facebook.com/BMJSPCare 2011 [date accessed September 2011]
