THE USE OF SMARTPHONES IN CLINICAL PRACTICE

Sally Moore and Dharshana Jayewardene look at the rise in the use of mobile software at work

Abstract

The use of smartphones and applications or ‘apps’ in clinical practice among nurses and doctors is on the increase. This article discusses the results of a survey undertaken as part of a service improvement project to develop an ‘app’ for use by junior doctors. The survey asked nurses and doctors to share information about how they used their smartphones at work, what they used them for and how and if they risk assessed the apps they use. Responses from 82 nurses and 334 doctors show a high level of users of text books, formularies, clinical decision tools and calculators, with less than one quarter of these users performed any risk assessment before use.

Keywords

Smartphones, apps, survey

A SERVICE improvement project was set up in 2012 by the patient safety team at the Bradford Institute of Health Research to develop a ‘junior doctor’s handbook’ app for use in the trust. It became clear that there was little in the literature about how mobile phones and apps are used in clinical practice (Moore et al 2012).

A service evaluation survey was undertaken by the team to investigate what informs the choice and use of smartphone and medical apps by clinicians in England. The results of the survey were used by the safety improvement team to develop an app for hospital doctors called the Ignaz Handbook (Health Education Yorkshire and the Humber 2014). It supplies cached information comprising overviews and guidance for practice in the organisation, for example guidelines for antibiotic prescription or prophylaxis, thereby supporting up-to-date and safe delivery of patient care.

Although the survey was designed as service evaluation to inform the development of the app, it provided some interesting data, the main points of which are discussed in this article. The article focuses on nurses’ responses, but does make comparisons between nursing and medicine.

Background

Smartphone apps for use in health care appear to be developing rapidly and there are now nearly 100,000 medical apps available to download (Kamerow 2013). In the UK there is still much debate about the use and regulation of healthcare apps. The RCN (2012), for example, issued a position statement about the use of mobile phones by nurses in their clinical practice. With respect to apps, the RCN (2011) highlights the ‘trustworthiness of software’ focusing on the variation in ‘quality of information’ available from downloadable sources and advises nurses to ‘judge whether the information is reliable, valid, accurate, authoritative, timely...’.

The potential use of smartphones as an adjunct to nursing practice (Moore et al 2012) is exciting, but the variable quality and lack of regulation also means there are potential risks; the same risks that are associated with the internet and the quality of information that can be easily accessed and downloaded (Purcell et al 2002).

Little work has been undertaken on the use of smartphone apps in practice by health professionals in the UK. In one survey (Devices 4 2010) of the use of smartphones at work, in which just under half the sample of 474 respondents were registered nurses, 80% of the healthcare professionals surveyed carried a smartphone at work and 18% of these ran work-related software or apps. A more recent study (Payne et al 2012) of medical students and junior doctors in the Midlands demonstrated an increased use of medical apps by doctors (76%
Table 1  The use of smartphones and risk assessment of apps

<table>
<thead>
<tr>
<th>Use of smartphones</th>
<th>Nurses (n=82)</th>
<th>Doctors (n=334)</th>
<th>Nurses and doctors (n=416)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using their smartphone at work</td>
<td>58% (48/82)</td>
<td>81% (271/334)</td>
<td>77% (319/416)</td>
</tr>
<tr>
<td>Accessing textbooks and formularies (of responses to the question)</td>
<td>72% (31/43)</td>
<td>83% (217/265)</td>
<td>81% (248/308)</td>
</tr>
<tr>
<td>Use as clinical decision tools and calculators</td>
<td>61% (25/41)</td>
<td>73% (191/261)</td>
<td>72% (216/302)</td>
</tr>
<tr>
<td>Risk assessing apps before use</td>
<td>24% (8/33)</td>
<td>23% (56/248)</td>
<td>23% (64/281)</td>
</tr>
</tbody>
</table>

\(n=98\) and medical students \((80\% \ n=203)\) since the Devices 4 \((2010)\) survey. Research indicates that nurses do not always have time to access information from the internet or journals to support delivery of evidence-based care \((Gerrish et al 2008)\), but there has not yet been an investigation into how mobile technology can be made available at the point of care.

Survey

Method The project was a service evaluation so ethical approval was not sought \((Health Research Authority 2014)\). A team of nurses, doctors and health psychologists developed an electronic survey, using SurveyMonkey, to ask healthcare professionals about their use of smartphones and apps at work. The survey was based on usability theory \((Karsh 2004)\) and focused on the features that are important to users, for example, ease of use, acceptability and safety. Single-item five-point Likert scales were used to measure the concepts of interest; although these are not as reliable or valid as multi-item scales, single-item scales were chosen to keep the survey at a manageable length while allowing for breadth of coverage.

The survey was piloted on a group of 50 foundation-year doctors \((FY1s)\), after which some questions were removed to make it shorter and easy to complete. A second pilot asked colleagues in the institute to complete the survey to check for additional issues with the questions. Once this second pilot was complete the survey was sent out to the survey population. Results were analysed using SPSS software.

Survey sample One hundred and sixty one NHS acute trusts in England were identified \((NHS Choices 2013)\) and their chief nurses or directors of nursing, medical directors and chief executives were contacted and asked if they would circulate an invitation to staff to complete the survey. In addition, nurses were invited to complete the survey through Nursing Management \((Moore et al 2012)\).

A prize draw of £100 in vouchers was used as an incentive to participate. Where there were no responses from named trusts, the invitation to complete the survey was sent a second time. All responses were anonymous, and respondents who wanted to be included in the draw were asked to supply an email address. Four hundred and forty eight people completed the survey, of whom 82 were nurses, 334 were doctors and 32 were other healthcare professionals. Only the nurse and doctor responses have been analysed for this article. The mean age in both groups was 40, with no significant difference in age between the professions or between users and non-users of smartphones.

Results

Four hundred and sixteen nurses \((n=82)\) and doctors \((n=334)\) from more than 40 trusts responded to the survey. It was not possible to identify all of the employing trusts from the responses, but where this was possible it was observed that 256 \((62\%)\) respondents came from 26 trusts. Table 1 shows the sample breakdown. Not all participants will have used all of the types of apps mentioned, so may have skipped those sections that they were less informed about.

Patterns of app use Smartphone users tended to be younger and the younger the respondent the more likely they were to use a smartphone; this was the same for nurses and doctors (Table 1). Of the nurse respondents, 58% used their smartphones at work, and this increased to 81% for doctors.

When asked about their perceptions of the use of smartphone applications at work, there was no significant difference in the responses from nurses who used and those who did not use a smartphone at work. On a rating scale of one to five \((1 = \text{strongly disagree} \text{ and } 5 = \text{strongly agree})\) the mean scores were 4.14 for ease of use, 3.68 for safety, 4.25 for usefulness and 4.17 for time saving.

The most widely used apps were formularies and textbooks, and 72% of nurses and 83% of doctors had used these types of apps. Clinical decision tools and calculators were also widely used and 61% of nurses and 73% of doctors had used them.

Factors affecting use When asked about factors to take into consideration when choosing healthcare apps, the top three considerations for nurses and
doctors were improved access to information, improved decision making and improved efficiency (Figure 1). Barely one quarter of those who used apps (24% of nurses, 23% of doctors) performed risk assessment on them. Informal methods were used most, including: only using apps from credible sources; running their own tests before use and comparing with known protocols; checking guidance from professional bodies; using reviews and recommendations; avoiding entering patient-sensitive data.

Effects on patient care When asked about the effects on patient care, doctors and nurses indicated similar, mostly positive, views (Figure 2, page 22): 'Improved access to Information', 'Improved decision making', and 'Improved efficiency' were the statements with most support. Negative effects such as 'Wastes time' and 'Gets in the way of care' had little support from either group. There was no difference between the professional groups when asked in which situations they would use a healthcare app; respondents were most willing to use apps in front of peers, followed by senior colleagues, and were least comfortable using them in front of patients and their families.

Discussion

The results of this survey offer an insight into the use of healthcare apps by nurses and doctors in clinical practice, however the use of directors of nursing and medicine as a first point of contact means that most of the sample was from established nursing and medical staff and not students or trainees. Respondents were generally positive about the use of healthcare apps but the self-selecting nature of the sample means some bias in favour of their use might be expected. Using a web-based survey technique and prize draw will have limited respondents to internet and email users and possibly people who are motivated solely by the chance of reward (Sanchez-Fernandez et al 2012).

The much higher number of doctors (78%) who responded to the survey might indicate that this technology has had greater acceptance in clinical practice among the medical profession; Health and Social Care Information Centre (HSCIC) (2013) workforce statistics for August 2013 indicate that there are about three times as many whole-time equivalent registered nurses (302,025) as doctors (104,117) working in the hospital and community health services. Alternatively it could reflect easier access to the technology needed to run healthcare apps and a more relaxed attitude to the use of mobile phones in the clinical area for doctors. Further, nurses are generally lower users of the internet in clinical settings than other professional groups (Gilmour et al 2008), so they might not have had the opportunity or inclination to complete the survey.

All respondents were more comfortable using a healthcare app in front of peers than in front of patients, which suggests uncertainty about the acceptance of the use of smartphones across the population in general. Nurses appear to want more 'official' evidence of efficacy and official endorsement to use apps. This finding supports research that has examined the use of evidence in practice and internet use by nurses and midwives (Thompson et al 2004, Gerrish et al 2006, 2011), and which suggest that nurses tend to prefer to use experienced colleagues, protocols or guidelines as information sources rather than online evidence or published research. Could a well evidenced and approved app pave the way to improve the use of research in nursing practice?
Smartphones and healthcare apps are here to stay and the results of this survey suggest that their potential benefits are recognised by healthcare professionals. For healthcare professionals to make the most of these potential benefits it is important that they feel confident that the apps they use are of a suitable quality (Figure 1). They also need to be more aware of the risks of using apps that have not been risk assessed. Haffey et al (2013) illustrated these hazards in a comparison of a number of opioid dose-converting apps that highlighted a wide range of dose outcomes with a poor evidence base across the apps.

It is therefore important that appropriate apps that can benefit patient care are officially endorsed and regulated (RCN 2012) by employing organisations and government. Until this happens all professionals must be wary of using healthcare apps that have not been risk assessed or approved at an organisational level, at the very least they should undertake a personal risk assessment on any app they choose to use as part of their own clinical practice.

Purcell (2002) thinks that regulation is not the way forward for healthcare information on the internet, but that education of users of the information is the answer; could this be true for healthcare apps? The Yorkshire and Humber Improvement Academy (part of the Yorkshire and Humber Academic Health Science Network) is now working on the introduction of the ‘Ignaz Handbook’ app; perhaps it is time for nurses to take up the challenge and work towards making Ignaz a multidisciplinary tool for safer patient care.

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