e-Health: developing trust, confidence, quality and sustainability

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The concept of e-health encompasses a large array of information technology products and systems, each involved in some way with the gathering, integration, interpretation and communication of data and information. These products and systems include electronic health records (EHRs), personal health records (PHRs), health information exchange and decision support tools. While e-health may have originated with computers that were located in the background of healthcare settings (i.e. initially within financial offices, specialist laboratories or research facilities) (Goodman, 1998), it has rapidly expanded its reach and scope. In the current environment, e-health is an integral and fundamental component of the very practice of healthcare (Georgiou, 2002). e-Health is best understood as a huge network of technologies within a social and technical system, involving hardware and software along with people, processes and human behaviours (Committee on Patient Safety and Health Information Technology, 2011).

This commentary provides an overview of a selection of 14 papers (summarised in Table 1A) dealing with key e-health initiatives that were published in the Health Information Management Journal over the period 2013–2018. The selected papers provide valuable insights into some of the key trends and issues that have shaped the e-health research agenda, particularly related to the way e-health is designed, implemented and sustained within the health system.

Most of the selected papers were from Australia (n = 8), but there were also contributions from across the world including Iran (n = 2), China, the United States, Spain and Taiwan. The selected papers cover a range of systems involving PHRs, patient portals, hospital information systems (HISs), electronic medical records (EMRs) and EHRs. The research methods reported in the selection of papers included literature reviews, surveys of clinicians and/or patients, case studies, qualitative studies, audits, implementation assessments and observational studies. Despite the broad array of research methods and wide international reach of the papers, a number of constant and recurring themes were identifiable across all the papers, particularly as related to the quality of e-health, its effectiveness, its trustworthiness (e.g. privacy and security) and its sustainability.

Quality and effectiveness

Each of the selected papers contributed to the growing evidence base regarding the potential of e-health to enhance the quality and effectiveness of healthcare delivery and outcomes. Lehnbom et al. (2014) reported that, when compared to paper, electronic discharge summaries led to improvements in the facilitation of key healthcare objectives. Guo et al. (2017) undertook a case study that showed how the active contribution of physicians in a New York hospital led to the creation of more efficient methods of e-health documentation, chart review and ordering. A study from China by Wei et al. (2018) demonstrated how a diabetes information system facilitated improvements in the management and quality of diabetes care. Mukhtar et al. (2018) showed how a data management system was able to facilitate forensic clinician and healthcare research by the Sexual Assault Resource Centre in Perth, Western Australia. There was a strong realisation among all the papers of the importance of user acceptance as a key precondition for the successful implementation of e-health systems (Forster et al., 2015; Hanna et al. 2017; Sharifian et al., 2014).

Trust and confidence

Trust in e-health was a dominant theme in the selected papers. A commentary by Williams (2013) noted that while e-health provides new ways of doing business and supporting healthcare delivery, there are new demands on information security that will necessitate more focus on responsibility, regulation and compliance. These points were echoed in a systematic review by Rezaeibagha et al. (2015), which noted the importance of access control policies, consent mechanisms, scalability and interoperability of systems, as essential to ensuring
consumer confidence in e-health. Other papers noted the need for ethical awareness (Sher et al., 2017), along with security certification warranties and objective third-party system evaluations as means of enhancing trust in e-health (Marca et al., 2014).

Sustainability and future challenges

The sustainability of e-health was also addressed in the selected papers, especially in regard to the role that patient access to personal EMR data plays in helping patients to understand and recall appointments (Forster et al., 2015). The papers highlighted some key challenges to the future diffusion and development of e-health. For instance, the e-health readiness assessment tool outlined by Gholamhosseini and Ayatollahi (2017) reported on the importance of continuing attention not just to the functionality of e-health but also the environmental and human resource readiness of organisations, communities and patients. In a similar vein, the work of Torrens and Walker (2017) described the potential danger of underrepresentation of disadvantaged population groups in PHR uptake, as an important area for continuing research and policy development. Hemsley et al. (2016) emphasised the need for future PHR research to encompass people with communication disabilities to generate evidence that can contribute to their health and well-being. The attention to e-health security and privacy across the selection of papers speaks strongly to the importance of building confidence and trust in the viability and capacity of e-health into the future.

Table 1A: Articles included in the virtual special issue of the Health Information Management Journal on e-health.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Area</th>
<th>Type of e-health system</th>
<th>Study type (country)</th>
<th>Key points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forster et al. (2015)</td>
<td>Usability, sustainability</td>
<td>Patient portal</td>
<td>Survey (Australia)</td>
<td>Majority of survey participants 52/79 (65.8%) reported that access to their EMR improved their ability to understand and recall appointments.</td>
</tr>
<tr>
<td>Guo et al. (2017)</td>
<td>Usability</td>
<td>EHR</td>
<td>Case study (USA)</td>
<td>Case study of New York hospital physicians involvement in creating more efficient methods of documentation, chart review and ordering. Their role helped to address concerns that imperfect EHR systems are associated with limited face-to-face time with patients and physician burnout.</td>
</tr>
<tr>
<td>Hanna et al. (2017)</td>
<td>Effectiveness, sustainability</td>
<td>MyHR</td>
<td>Qualitative (Australia)</td>
<td>The realisation of tangible benefits for patients from the personally controlled health record (MyHR) will pivot on the completeness of relevant health information and its ease of use.</td>
</tr>
<tr>
<td>Hemsley et al. (2016)</td>
<td>Effectiveness, sustainability</td>
<td>MyHR</td>
<td>Review (Australia)</td>
<td>A literature review focused on ways to enhance the design of MyHR for people with communication disability and inform policy and practice.</td>
</tr>
<tr>
<td>Lehnborn et al. (2014)</td>
<td>Quality, effectiveness</td>
<td>Discharge summaries</td>
<td>Audit (Australia)</td>
<td>Compared to paper discharge summaries, electronic discharge summaries led to improvements in the documentation of dose and route information as well as the explanations for medications added to medication regimes.</td>
</tr>
<tr>
<td>Marca et al. (2014)</td>
<td>Trust</td>
<td>EHR</td>
<td>Survey (Spain)</td>
<td>Key facilitators of EHR implementation include availability of technical support, security certification warranty and objective third-party system evaluations.</td>
</tr>
<tr>
<td>Mukhtar et al. (2018)</td>
<td>Effectiveness, sustainability</td>
<td>Data management</td>
<td>Implementation (Australia)</td>
<td>A data management system was designed to maintain accurate quality information on all sexual assault cases referred to the Sexual Assault Resource Center. The system led to the development of high-quality data services and a reliable research resource.</td>
</tr>
<tr>
<td>Rezaiebagha et al. (2015)</td>
<td>Trust, security, privacy</td>
<td>EHR</td>
<td>Review (Australia)</td>
<td>The review highlights the importance of technical features essential to EHR security and privacy, including access control policies, consent mechanisms, scalability and interoperability of systems.</td>
</tr>
<tr>
<td>Sharifian et al. (2014)</td>
<td>Usability sustainability</td>
<td>HIS</td>
<td>Survey (Iran)</td>
<td>User acceptance is a precondition for successful implementation of HIS. The factors that influenced nurse acceptance of the HIS were performance expectancy, effort expectancy, social influence and facilitating conditions.</td>
</tr>
<tr>
<td>Sher et al. (2017)</td>
<td>Trust, security, privacy</td>
<td>EMR</td>
<td>Survey (Taiwan)</td>
<td>Survey highlighting the need for continuous ethics awareness for effective strategies to protect privacy and address security concerns.</td>
</tr>
</tbody>
</table>
EHR: electronic health record; EMR: electronic medical record; ICT: information and communications technology; MyHR: My Health Record; HIS: hospital information system; T2DM: type 2 diabetes mellitus.

References


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