Special Issue Editorial

International perspectives on how information and ICTs can support healthcare

This special issue of the *Health Informatics Journal* contains papers from the 15th International Symposium for Health Information Management Research (ISHIMR 2011), which was hosted by the University Hospital, Zurich, Switzerland in collaboration with the University of St. Gallen, Switzerland and the Centre for Health Information Management Research (CHIMR), University of Sheffield, UK from 8th-9th September 2011.

The ethos of the ISHIMR conference is to encourage researchers and practitioners working with information, and information and communication technologies (ICTs) within the health care sector to present their research and to discuss developments in the field. A range of papers and posters were presented during the conference. This special issue contains the six papers that received the highest ratings from the peer review process, undertaken independently by members of the ISHIMR 2011 Programme Committee. The lead authors from the selected papers are from Finland [1], Germany [2], Greece [3], Switzerland [4] and the UK [5, 6]. The selection contains both empirical and theoretical papers in two main areas: health information and on the use of information technology within healthcare: this provides a nice balance between the consumer perspectives and other user perspectives within healthcare respectively.

The first paper in the trio of papers on health information is by Eriksson-Backa et al. [1] and reports on their study of health information literacy in everyday life among older people in Finland. The authors provide a very helpful introduction to health literacy and health information literacy, both from a conceptual point of view and from how they can be measured. Their study of 281 people aged 65-79 years living in the Turku region of Finland reported particularly striking associations between level of education and aspects of health information literacy. People with higher levels of education were more likely to know when they needed health information and where to obtain it, and reported that it was easier for them to find the information, compared to people with medium and basic levels of education. People with higher education were also more likely to report that it was easy for them to determine how trustworthy the information was, and were more likely to have learned something new from the information they found. People with only basic levels of education reported more difficulties in understanding the terminology in the information they found. Overall, although these results may not be surprising, they present important evidence on how lack of education is effectively a barrier to obtaining and using health information effectively. This rather bleak picture provides a strong argument for the need to provide health information to older people that is appropriate and accessible, irrespective of their level of education.

In the second paper [2], Holtgräfe and Zentes reported on their study to investigate the determinants of online non-prescription drug information seeking and the impact of this on consumers' use of purchase channels. The authors point to the importance of the non-prescription (or "over-the-counter", OTC) medication market, reportedly worth 6 Billion Euros per year, and the growing availability of these drugs online. They reported the relative lack of research on online drug information seeking and their study is therefore important in addressing this gap. Adopting the Technology Acceptance Model (TAM) [7, 8] and the Comprehensive Model of Information Seeking (CMIS) [9], they developed and tested a conceptual model for the factors determining use of the Internet for purchasing non-prescription drugs. Their study involved 253 interviews with people living in small, medium and large cities in South-West Germany and a national web-based survey which yielded 314 usable questionnaires, the data from the two parts being combined for the purposes of analysis. The hypotheses developed to test the model were then tested using partial least squares regression: the results section is appropriately detailed and the results of the model are portrayed in the diagram (Figure 3). Among the findings, the respondents' perceived ability to search online for drug information had a significant positive effect on their preference for using the Internet as a source of information on OTC drugs. Respondents' perceived ability to search online for drug information in turn was determined by respondents' Internet experience and their subjective knowledge of OTC drugs. Holtgräfe and Zentes conclude that the importance of the Internet will continue to grow, but hat the dangers of seeking information and buying non-prescription drugs online must not be under-estimated.

Butterworth et al. conclude the trio of papers on health information behaviours with a fascinating, highly thought provoking, and possibly controversial, view on the value of information for users of health services [5]. The title "Providing confusion: The need for education not information in chronic care" is bold, particularly given the ISHIMR and Health Informatics Journal audience and we encourage you to read it, in conjunction with the first two papers [1,2], and then form your own opinion. The authors take Dixon-Woods' seminal paper [10], in which she identified two discourses (patient education and patient empowerment) within the research literature on patient information leaflets, and critiques these against the work of Dewey [11]. They undertook a literature review and used this to classify the outcomes of the UK Expert Patient Program and the Penarth Integrated Care Team according to Dixon-Woods' two discourses. Butterworth et al. propose a hybrid approach, which combines the needs of the healthcare provider to change patient attitudes, behaviour and understanding whilst improving patient satisfaction and serving the interests needs and priorities of patients. They also critique the system centric and user centric approaches identified in information science [11] and advocate that any system for providing patient information should also include a formal education program that enables patients to identify new resources and promoting health literacy.

The three papers on the use of information technology within healthcare commences with Ketikidis et al. [3], which reports on a study to examine health professionals' acceptance of IT in Skopje in the former Yugoslav Republic of Macedonia. The authors used the revised version [12] of the Technology Acceptance Model (TAM) [13] to examine the health professionals' views. The paper provides a brief, but useful, introduction to the development of the TAM, and its revised version, and its use in health informatics. The study sampled nurses and doctors from three clinics in Skopje and used a structured questionnaire to collect data relating to the TAM models. Stepwise multiple regression analysis was used to test their hypotheses, i.e., that perceived usefulness (PU) and perceived ease of use (PEOU) would predict healthcare professionals' intentions to use Health IT systems, but that subjective and descriptive norms, relevance and computer anxiety would predict use above these effects. In their final model, perceived ease of use (PEOU) (accounting for 63.3% of the variation in health IT acceptance), subjective norms (3.4%) and relevance (1.9%) were the strongest predictors of health IT acceptance. The finding that perceived usefulness (PU) was not an independent predictor health IT acceptance is novel, and contrary to previous studies, and the authors suggest that informing potential users of health IT of it can be used effectively, developing user-friendly application, and providing workshops could improve perceived usefulness and therefore lead to higher acceptance once the system is installed. Ketikidis et al. conclude that healthcare professionals might be more inclined to use IT by promoting an organisational culture that encourages the use of technology.

Poulter et al. [6] describe their study and the development of a model, CICERO (comprehensive, integrated, customised electronic record systems for oncology), for representing electronic document and records management system (EDRM/EDRMS) in cancer care. The study was undertaken during the development of an EDRM system at the Clatterbridge Centre for Oncology in the UK. The paper briefly reviews the development of Electronic Patient Record (EPR) and Onco-EPR systems in the UK and describes the development of the CICERO model and its EDRM system. Of the staff eligible to participate, 130 completed the survey (response rate = 21%), and these constituted medical, nursing, allied and other health professions and administration and management staff. Almost all (98%) of the staff used paper-based medical notes; however, over a half (53%) reported that they did not always have access to the patient's (paper-based) medical notes. A further worrying finding was that a high proportion (64%) of respondents reported that they suspected that the medical notes were not up to date anyway. In addition to medical notes, participants were asked about their use of electronic patient records, and 86% reported using the Trust EPR systems. Interestingly, while almost a half (49%) of participants thought clinical information would be more up to date using EDM, and they would spend less time searching for patient information (43%), less than a third (32%) felt that patient care would be improved and less than a quarter (24%) felt that clinical decisions would be more informed. These findings highlight the difficulties that clinical and managerial staff can face in using paper-based record systems, but also raise concerns about their beliefs in electronic systems.

Mettler and Raptis [4] conclude this special issue with a consideration of the field of Health Information Systems by developing a systematic framework and proposing a research agenda for the field. The authors undertook an extensive literature search to identify articles on health information systems and then reviewed the abstracts to identify themes and sub-themes. The authors report that the predominant theme of "e-health and clinical systems" overlaps with the field of medical

informatics, but differs in that it emphasises the inter-organizational and inter-disciplinary research in between medical institutions and/or industry. They identified six sub-fields within this theme for further research, namely: patient-centred systems, clinical support systems, interoperability of medical and administrative systems, ICT for public health, bioinformatics and medical knowledge and decision-support systems. The second theme Mettler and Raptis identify for research in health information systems is personal health and independent living, which include the sub-fields of home and chronic diseases, patient safety and quality improvement of medical treatments, interoperability of consumer and clinical systems, ICT for smart and personal inclusion, consumer health informatics and personal and guidance systems for people with impairments. The third area the authors identify is the intersection between these two themes, which might include the education, societal, economic and behavioural aspects relating to health information systems. The resulting research agenda presented by Mettler and Raptis could be regarded as a blue print for new research in health informatics and health information management research, and we hope that papers covering these areas will appear in future ISHIMR conferences and in the *Health Informatics Journal*.

We hope that you find this selection of papers interesting and that it stimulates you in your own research and endeavours. It may indeed encourage you to submit papers based on your work for future ISHIMR conferences (see http://www.ishimr.co.uk/). We would like to thank Professor Rob Procter, and the Health Informatics Journal editorial team for their continued support in publishing the top-rated ISHIMR conference papers in the Health Informatics Journal. This ensures a wider audience for the dissemination of high-quality work as well as giving authors the incentive and opportunity of having their paper published in the journal.

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