

mHealth Research Group NUI Galway: Using mobile technologies for effective health behaviour change

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mHealth (mobile health) is the practice of medicine, public health and allied healthcare or self-care supported by mobile devices (e.g. smartphones, tablet computers, wearable activity monitors). Among the world's population of 7 billion there are over 5 billion mobile devices and over 90% of users have their mobile device near them 24 hours a day (European Commission, 2014). Mobile health apps have captured the public imagination allowing for unobtrusive self-monitoring and the dawn of the 'quantified self' movement as a potentially major aspect of health improvement (Commission for Communications Regulation, 2014).

The development of these apps provides a unique opportunity for researchers in population health to track real-time, continuous, accurate and objective measures of health indices and related behaviour. Mobile devices provide a potentially very powerful platform for delivering behavioural interventions and providing health relevant feedback to users. Well-designed mHealth interventions may effectively change patient health-related behaviour, improve patient knowledge and support for active involvement in self-management and lifestyle change leading to better health outcomes (EU Green Paper on mHealth, 2014). However, it is critical that mHealth app developers work closely with behavioural scientists to ensure that interventions are informed by relevant behavioural theory. Health psychologists are

leading the development of scientific methods for studying behaviour change, with the potential to significantly enhance public health research through employing theory-linked, evidence-based behaviour change techniques.

The mHealth Research Group was recently launched in NUI Galway in response to this rapidly growing, multidisciplinary niche area of research activity. The group secured funding from the Irish Research Council, Enterprise Ireland and the Irish College of General Practitioners to conduct research that harnesses new digital technologies for health behaviour change. NUI Galway is ideally placed to lead in this exciting interdisciplinary area of applied science with internationally recognised research strengths in the area of health psychology, medicine, information technology, health economics and engineering.

The mHealth Research Group hosted the inaugural mHealth Conference in NUI Galway on 9th June 2015 (supported by the Irish Research Council and the Whitaker Institute, NUI Galway). This conference attracted a lot of interest with presenters and delegates from Ireland, the UK, Europe and the U.S.A. representing a broad range of stakeholders from industry, health services and academia.

Chair of the conference, Dr. Jane Walsh called for a more multidisciplinary approach to integrate mobile technologies into effective behaviour change interventions. The first keynote, Dr. Liam Glynn spoke of the potential of mHealth apps to modify patient behaviour and to help in the management of chronic conditions. He presented the findings of the "SMARTMOVE"



Picture 1. Eighty delegates attended the Inaugural mHealth Conference held at National University of Ireland, Galway on June 9th

trial (2014). Dr. Glynn noted that the potential of mobile devices for health is linked to the responsiveness it generates in us. One participant reportedly referred to the walking app used in the trial as a "little boss in their pocket." Dr. Glynn's talk posed challenging questions about how can we close the gap between the speed of technology innovation and speed of gathering evidence. He highlighted how technology may serve as a conversation starter about healthy lifestyle with primary care patients, with apps providing an opportunity to engage with difficult topics like obesity.

Professor Chris Nugent from University of Ulster spoke about research from the Smart Environments Research Group (SERG). He discussed the evolution of technology over the years. The SERG group have been impressively

working on medication adherence solutions since 2001. Professor Nugent emphasised the lessons he has learned, including the importance of user-centred design, interdisciplinary collaboration, and the development of easy-to-use, non-complex tools. He urged researchers to avoid discarding data on non-adherent individuals but rather, use it to gain insight into those who discontinue studies.

Dr. Sherry Pagoto from the University of Massachusetts Medical School focused on using social media to promote a healthy lifestyle. She noted that health habits are shared in social circles. Dr. Pagoto discussed research into people who "tweet it off" - those who share their weight-loss journeys on Twitter. Anonymity, common goals, less stigma, and control over relationships appears to make Twitter an

attractive forum for weight loss support. Interventions that incorporate social media are delivered in a different way to traditional approaches. Short digestible content is important for “microcounselling” that mirrors how people are used to using these websites (i.e. an asynchronous, fluid, conversational approach). Dr. Pagoto encouraged researchers to re-imagine pre-existing tools to engage participants in novel ways.

Professor Jeremy Wyatt of the University of Leeds presented data highlighting the relationship between app price and quality. The research indicates that the cost of an app is not related to the evidence based content. He also spoke about concerns around privacy issues with health apps and addressed the possibility of using quality approval processes to improve mHealth devices. Considering the criteria for mHealth apps, he noted that innovation alone

does not lead to behavior change. Professor Wyatt warned of the pitfalls of relying on apps that were not evidence-based in practice or in research. He concluded by stating that “We’ve got a bad dose of apptimism.” This “apptimism” must be challenged and the quality of the app content should be thoroughly evaluated before use.

Stephen O’ Reilly of Enterprise Ireland advised on funding innovative mHealth research. He highlighted funding streams such as the H2020, and once again noted the importance of interdisciplinary research and collaboration. During lunch, delegates were given the opportunity to look at posters relating to mHealth research. The best poster was judged by Prof Marie Johnson, University of Aberdeen and the prize was awarded to Eimear Morrissey of NUI, Galway for her poster on a content analysis of behaviour change techniques used in apps.

After lunch, a series of ten minute talks gave a



Picture 2. Delegates enjoyed the opportunity to meet and share ideas with others from various multidisciplinary backgrounds.



Picture 3. Keynotes and Conference organising committee of the conference.

From left to right:

Fourth row: Professor Chris Nugent - University of Ulster (keynote), Professor Jeremy - Wyatt Leeds University (keynote), Ryan Hoey (organising committee);

Third row: Dr. Brian Slattery (organising committee), Dr. Gerry Molloy (organising committee), Stephen O'Reilly - Enterprise Ireland (keynote);

Second row: Emma Carr (organising committee), Lisa Hynes (organising committee), Dr. Liam Glynn - NUIG (keynote);

Front row: Eimear Morrissey (organising committee), Dr. Sherry Pagoto - University of Massachusetts (keynote), Dr. Jane Walsh (conference Chair), Teresa Corbett (organising committee), Dr. Brian McGuire (organising committee).

flavour of work in the area. Chartered Physiotherapist Avril Copeland spoke about the pervasiveness of mobile technology and an app named TickerFit which aims to empower health professionals by enabling them to provide personalised lifestyle interventions for each patient, based on their current health status. Dr. Brian Slattery of the Centre for Pain Research at NUI, Galway discussed the use of e-health and mHealth technologies to help individuals to manage chronic pain. Dr. Jim Duggan spoke about public health informatics research at NUI, Galway. Eimear Morrissey from the mHealth Research Group in Galway described her research into apps for medication adherence. Her work

involved coding apps using the Behaviour Change Technique (BCT) taxonomy. She identified which BCTs were most commonly used, highlighting a very clear opportunity for Health Psychologists to contribute to app design. Eamonn Costello presented on the development of an app to promote medication adherence for transplant patients named "Patient Buddy". Occupational Therapist Marie Tierney discussed the use of mobile devices to explore energy expenditure in rheumatoid arthritis patients. She emphasised how wearables can be used to obtain high quality objective data from patients. Finally, Marta Marques from the University of Lisbon spoke about her work on a Horizon 2020 project on

weight loss. The NoHoW Toolkit will explore how technology can be best used to successfully support weight-loss management.

It was a busy day, filled with innovative ideas and conversation. The Q&A session at the end of the day synthesised the main points emphasised by the keynotes. Prof Jeremy Wyatt highlighted the importance of remembering that “ultimately it is humans using the technology” - and therefore psychologists have a role to play in app design. Dr. Sherry Pagoto concluded that mHealth needs to lose novelty factor and become more integrated into the healthcare system.

Feedback from the day was wholly positive, with delegates enjoying the opportunity for multidisciplinary conversation, networking and sharing of ideas. And of course, the fact that it was set in Galway in the beautiful West of Ireland was also appreciated!

mHealth has enormous potential to enhance healthcare delivery in terms of efficacy and cost efficiency. However, it is critical that quality research provides the evidence base required for this to occur. The mHealth research group is leading high quality multidisciplinary research in this area. For further information contact Jane.walsh@nuigalway.ie

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