Get moving! Self-management support using mobile technology : a monitoring and feedback tool embedded in a counselling protocol to increase physical activity of patients with COPD or type 2 diabetes in primary care: the It's LiFe! study

CHAPTER 10
Valorisation

Introduction

The research in this dissertation resulted in an effective blended mobile health intervention executed by practice nurses to stimulate physical activity. The intervention consists of a monitoring and feedback tool, an associated coaching system and a counselling protocol. More research is needed to evaluate the effects of this intervention on a larger scale and its cost-effectiveness. However, there are already relevant insights gained during the user-centred design and evaluation of the intervention which are of importance for the value-creation for the different stakeholders involved. Therefore this chapter focusses on emerging opportunities for valorisation that could be taken on the basis of the research presented in this dissertation. Furthermore, this chapter also describes which actions have already been taken to disseminate the knowledge gained in this research. The following definition of 'valorisation' is assumed: The process of value-creation out of knowledge, by making this knowledge suitable and available for economic or societal utilization and to translate this into high-potential products, services, processes and industrial activity.[1] It concerns the value that can be created through the transfer of scientific knowledge gained during *the It's LiFe!* project; not only commercializing the monitoring and feedback tool and the coaching system, but also the transfer of acquired knowledge in order to carry out the intervention.

Relevance

Worldwide many people are not sufficiently active. This is a major problem since physical inactivity has major health effects. According to the World Health Organisation insufficient physical activity is one of the ten leading risk factors for death worldwide and a key risk factor for non-communicable diseases, such as diabetes, cancer and cardiovascular disease. Therefore a lot of initiatives are undertaken to encourage people to become more active, such as national campaigns and initiatives at school, at work and in the neighbourhood. Also primary care providers try to stimulate physical activity of patients. The *It's LiFe!* intervention supports people with COPD or diabetes type 2 to become more active. More generally, the results of the studies of this dissertation indicate that guidance by a care provider can be reinforced by daily monitoring, feedback and goal setting.

Target groups

For the following target groups the results of the *It's LiFe!* project are valuable.

Patients
In the studies presented in this dissertation the focus was on people with COPD or type 2 diabetes, aged between 40 and 70 years, but there is actually no need to set a maximum

age to the target group. The most important non-age-related condition is that the patient is motivated to change and in the possession of a smartphone. As the conditions of people with COPD and type 2 diabetes are very diverse, it is to be expected that the intervention could be beneficial for all people who visit the practice nurse regularly and experience barriers to become more physically active. One could even think about using it as a preventive tool for chronic conditions to guide people in general that could benefit from more physical activity regardless their current condition.

Health-care professionals

In this research the Self-management Support Programme (SSP) was applied by practice nurses. Those nurses were chosen as a mode of delivery since they are explicitly responsible for the promotion of a healthy lifestyle. However, the intervention could also be applied by other care professionals who stimulate a healthy lifestyle, such as physiotherapists, dietitians when treating people with obesity, and general practitioners. Experiences gathered from COPD patients during the user centred design process indicated that especially during rehabilitation programs, which focus on improving exercise capacity, more attention is needed on physical activity in daily living. Patients indicated that extra guidance after a rehabilitation programme is desirable to maintain the benefits. Furthermore, employees from fitness centres, municipalities and people involved in neighbourhood initiatives that focus on stimulating physical activity could use the knowledge gained during *the It's LiFe!* project.

Industry

Despite the growing emphasis on eHealth in recent years to improve care processes and outcomes, the scientific evidence of its use often lags behind. This research indicates that automated self-monitoring of physical activity with direct feedback and goal setting embedded in the care process is effective. Companies could use this knowledge in their marketing strategies for self-monitoring devices. Furthermore they can use the knowledge gathered during the user-centred design process to improve their designs and effectuate products which are better adapted to the end users. An insight which could be valuable for future product development is that if self-monitoring takes place and its data is shared with somebody else, the user should have the opportunity to make annotations, to clarify unusual data. Furthermore, especially for the elderly target group, clear instructions and a helpdesk are a necessary condition for acceptation and implementation.

Health insurance companies

The research presented in this dissertation indicates that self-monitoring embedded in care is an effective intervention to stimulate people to have more physical activity. If the results endure over a longer period of time, this might result in health benefits which will eventually lead to a healthier population, less complications and thus reduces health

cost which makes it attractive for insurance companies to offer it to their customers. Especially, if the intervention will be implemented as a preventive method to avoid the onset of chronic disease, this would be profitable. With this in mind, it would also be worthwhile to consider providing the intervention in a modified form at work or at school to anybody at risk of an inactive lifestyle.

Activities/products

Besides the main products developed in this project, the monitoring and feedback tool, the associated coaching system and the Self-management Support Program, other products were developed and activities were undertaken to disseminate the gained knowledge.

Patients

All study participants and other persons in the *It's LiFe!* network received two newsletters per year about the progress and the results of the project. Those letters were also available on a website.[2] Furthermore, the involved companies posted information about the intervention on their websites.[3,4] During the study period the following products were developed to inform the patients in the study. Patients randomised in the tool group had access to a special website[5] with information about physical activity and about the use of the tool. At the end of the trial, all participating patients received an overview of their physical activity data. They also received the PAM accelerometer, which they could use optionally in order to continue (group 1) or start (group 2 and 3) with self-monitoring of their daily activity. During the project, the patient representatives acted as ambassador, but further dissemination of knowledge could be done by bringing the results to the attention of other COPD or diabetes type 2 patients through the regular information channels of the patient associations.

Health-care professionals

Participating health-care professionals were informed about the results of the pilot and the trial directly after the studies in a meeting. Furthermore, several articles were posted in professional journals for nurses, general practitioners and physical therapists. In addition, the results of the studies were announced on (inter)national conferences, which were attended by various researchers, companies and health professionals involved in eHealth and chronic care. In addition, it is important that the end results of the project, which are currently described in English-language scientific journals, will also be published in Dutch professional journals.

The importance of an active lifestyle and how to encourage this should be a standard part of the education of healthcare professionals. Some study results have already been described in a newsletter of the professional association of nurses V&VN VZI (nurses and healthcare informatics),[6] but the adapted five A's model for physical activity

counselling, expanded with the use of the monitoring and feedback tool could also be of interest for practise nurses who are not acquainted with eHealth interventions. The consultation cards, designed to support the practice nurses in how to perform the consultations, are a ready- to- use instrument in the implementation of the intervention on a larger scale. In addition, the knowledge gained in this project will be made available through EIZT, the Centre of Expertise for Innovative Care and Technology of Zuyd University of Applied Sciences.[7] At this centre, teachers/researchers are working together to give 'technology in care' a more explicit place in the curricula of the various study programs of the Faculty of Health.

Innovation

The *It's LiFe!* monitoring and feedback tool is not the only tool which enables an objective measurement of one's physical activity level. Step counters, accelerometers worn at the hip or around the wrist with related applications and Smartphones with integrated accelerometers pursue the same goal. However, the marketing around these devices and apps is mostly targeted at people who are already conscious about a healthy lifestyle and act accordingly (the quantified self).[8] The innovative aspect about this research is that it was targeted at people with a chronic disease who are difficult to motivate and that it brought together the strengths of new technologies and the coaching role of a care provider. With this combination, people who are normally not triggered by persuasive technology are involved and the coaching role from the care provider is reinforced by providing objective measurements. Daily monitoring and feedback broadens the scope of the consultation room.

Planning and realization

The research in this dissertation did reveal some suggestions for improvement of the tool such as more tailored and diverse feedback messages, making the tool suitable for the measurement of swimming and cycling, and adding a possibility to share results with peers for extra social support. The latter was waived by participants in the user requirements research, but opted as a suggestion for improvement in the process evaluation of the RCT. The feasibility study and the process evaluation of the RCT among the nurses revealed that nurses want the physical activity results of their patients to be visible in their own electronic health system, rather than on a website. Furthermore, they indicated that they would like to have the possibility to send feedback messages to the patient, rather than call them in between consultations. This would be a valuable option to explore, since it will personalize the feedback for the patient and in this way it can be sent and read whenever possible.

At this moment, the involved companies, Maastricht Instruments and Sananet are working together with a start-up company named 'A.motion' to bring the *It's LiFe!* tool

and its services to the market. Their aim is that at the end of 2015 the product and services should be available. They have already launched a pilot project in physiotherapy practices to further explore the possibilities of the *It's LiFe*! intervention.

In the future more people will monitor their own health variables to get more control over their own health and to be an equal partner in contact with their health professionals. The challenge for system developers and care providers will be to integrate, interpreted and react properly on all these different data. Furthermore, a number of privacy and interoperability issues have to be solved to take full advantage of all technical possibilities.

Referred websites

1. http://www.netherlandsproteomicscentre.nl/npc/valorisation/what-is-valorisation.html
2. http://www.zuyd.nl/onderzoek/lectoraten/technologieindezorg/projecten/its-life
3. http://www.maastrichtinstruments.nl/portfolio/its-life/
4. http://www.sananet.nl/its-life.html
5. http://www.maastrichtuniversity.nl/web/show/id=6637066/langid=43.
6. http://issuu.com/venvn_vzi/docs/vzi_nieuwsbrief_mei_2014
7. http://www.innovatiesindezorg.eu/
8. http://www.quantifiedself.nl/