

Persuasive eHealth to support home rehabilitation of the elderly after a hip operation: an explorative approach

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Abstract. Home rehabilitation after a hip operation can be daunting for the elderly. Lack of motivation to exercise and being insecure in the recovery process are common barriers. Personalized eHealth can help to ensure that the patient exercise efficiently, filling the gap between treatment in the practice with the physical therapist and practice at home.

Keywords. eHealth, home rehabilitation, elderly

1. Introduction

The elderly population is growing worldwide, and osteoarthritis amongst this group is common, often resulting in a joint prosthesis¹. The stay in the hospital after such an operation is very short. Rehabilitation after discharge from the hospital takes place with a physical therapist. The usual after-care is about exercising to improve the mobility of the hip / knee. Instructions are usually given in the form of folders or videos. However, physical therapists see a gap between treatment in their practice and practice at home. Furthermore, patients are not always motivated enough to exercise at home and are insecure in what they do. The use of eHealth to support the patient's rehabilitation at home is limited. Sensor technologies for example are used to collect quantitative information about joint recovery². The research reported here focuses on exploring the design of a persuasive eHealth solution, for effective rehabilitation at home.

2. Method

In order to design a persuasive eHealth solution, we use the methodology we developed based on the CeHRes framework and other models for persuasive design and behavioral change³. This methodology begins with a contextual inquiry, resulting into prototyping and finally implementation. Persuasive features and triggers for motivational behavior are throughout the design process incorporated into the eHealth solution. Three groups of 3rd and 4th year bachelor students (4 to 5 students per group) worked for a period of 20 weeks with the Medical Technology Research Group on this project. One group

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consisted of informatics students from InHolland University of Applied Sciences and two other groups consisted of a multidisciplinary team from Rotterdam University. Students used a fictive casus reflecting a real-life situation. We chose the approach of student's participation and action research in order to explore various proofs of concept and to provide students the opportunity to experience a healthcare setting and to think out of the box with other disciplines.

3. Results

The designing of an eHealth solution focused mainly contextual inquiry, requirements and prototyping. Formative evaluation was carried out with the targeted groups. Each group provided a proof of concept developed in co-creation with the targeted group and physical therapists. Researchers from the Medical Group acted as eHealth experts. Figure 1 shows a paper prototyping from one group during contextual inquiry, and a developed solution to ensure that the exercises are done correctly from another group. Students used Fogg's Behavior Grid to determine the kind of behavior change that was needed to optimize the rehabilitation process at home. In the design of their eHealth solutions they used the principles of persuasive design as described by Inas Kukkonen to determine which persuasive elements should be used.



Figure 1. Prototype examples

4. Discussion and Conclusions

Home rehabilitation after a hip or knee operation often remains a challenge for a growing number of elderly and limit participation and self-management. Exploring various eHealth proof of concepts based on persuasive features and behavioral change can help to tune to a more personalized solution. Students' participation is an added-value for the healthcare setting and for providing input to further research in this area.

References

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