Work In Progress: Matching Persuasive Design with Self-Management Needs of Patients with Cardiovascular Diseases – Preliminary Results of A Survey Vignette Experiment

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1 Background

Cardiovascular diseases constitute an alarming crisis for health care worldwide [1, 2]. Technology-based self-management support is proposed as a potential solution [3]. However, little research has been done to understand how these technologies should be designed so that they can effectively support specific self-management goals of patients [4, 5]. This poster presents the preliminary results of a study that aims to explore expert preferences and insights when matching persuasive design strategies with self-management goals and tasks of patients with cardiovascular diseases.

2 Methods

An online survey vignette experiment was conducted [6]. The experiment consists of a collection of vignettes, which content systematically varies according to different factors and factor levels. The choices of factors and levels for this experiment were informed by the Persuasive Design Model from Oinas-Kukkonen et al. [7] and the Middle Range Theory of Self-Care of Chronic Illness from Riegel et al. [8]. The factorial design consisted therefore of 2 factors (persuasive design categories and self-management needs) with 3 levels each (primary task support, dialogue support, social support; self-care maintenance, self-care monitoring, self-care management). In total, 9 vignettes were created with a different combination of factors and levels. In each vignette the self-management need was represented with a video that described the behavioral needs of an individual living with a cardiovascular chronic condition (Figure 1).

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Fig. 1. Still frames of video representing the case of a patient with self-care maintenance needs

On other hand, the persuasive design was represented in each vignette through a mock-up of an interface and the key ingredients of an eHealth intervention (Figure 2). Experts with experience on the topics of self-management, cardiovascular diseases, and eHealth were recruited as participants.

Fig. 2. Example of mock-up representing the design of an eHealth intervention

3 Results

More than 50 experts have answered the survey so far, up until February 2020. The survey collects quantitative data in the form of ratings about the potential success of persuasive designs (represented by the mock-ups) when matched to specific self-management needs (represented by the case videos). Namely, after presenting each case and the proposed intervention design, participants are asked: "How likely is it that this intervention design will successfully support the self-management needs of the case presented?". Participants can respond via a 5-point Likert scale, ranging from "Extremely unlikely" to "Extremely likely". The survey also collects qualitative data in the form of perceived barriers for the success of persuasive design strategies when matched with specific self-management needs. In this case, participants are asked: "Under what circumstances would this intervention not work to support the self-management needs of the case presented?". Participants are prompted to describe as many circumstances as they can think of. Preliminary analyses show that some persuasive design strategies might indeed be perceived by experts to work better than others depending on which specific self-management needs are targeted. Moreover, a wide range of potential barriers have also been listed by experts for each case-design match up.

4 Discussion

Thoughtful intervention design informed by theoretical models is important for the success of eHealth. However, a review of eHealth interventions that support self-management in cardiovascular diseases showed that theoretical models are not always used to guide design [4]. The value of this poster is that it presents a study that directly addresses the challenging topic of how to translate the persuasive design conceptual categories into intervention components that can actually match the behavioral needs and goals of patients living with cardiovascular diseases.

It is important to understand which design strategies are proposed to be potentially more effective than others, and why. The present study combines key factors of two models. First, the behavioral needs of patients living with cardiovascular diseases are described in accordance to the Middle Range Theory of Self-Care of Chronic Illness from Riegel et al. [8]. Second, the potential design strategies that can be implemented in eHealth interventions to support self-management are based on categories of the Persuasive Design Model from Oinas-Kukkonen et al. [7].

There is a fair amount of research about how to tailor the design of eHealth interventions, for example, in cardiovascular diseases [9-11], other chronic conditions [12], or in the field of mental health [13]. However, previous studies did not seek to match the design choices with specific, theory-based, key components of self-management. All in all, the results of this expert-based study will advance our knowledge about which potential paths should be followed when designing and tailoring eHealth interventions to support self-management in cardiovascular diseases.

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