Care Professionals' Perceived Usefulness of eHealth for Post-Discharge Stroke Patients

Nadia DAVOODY[1] and Maria HÄGGLUND

Health Informatics Centre, Department of Learning, Informatics, Management, and
Ethics, Karolinska Institutet, Sweden

Abstract. Despite many attempts to provide appropriate tools for supporting stroke patients in their care and rehabilitation processes, there is still room for improvement. We propose an online care and rehabilitation planning tool as a potential eHealth service for stroke patients. The aim is to study the care professionals' perceived usefulness of the planning tool. We developed and presented a functional prototype to a neurology team in Stockholm. Three focus groups were performed with the care professionals in the team and the data were analysed based on the unified theory of acceptance and use of technology. Although care professionals mentioned challenges such as time limitation for using the tool and issues related to the responsibility of the system, they were positive towards the tool and its potential usefulness in ease of understanding the rehabilitation process and support for collaboration.

Keywords. Stroke; eHealth; Rehabilitation; unified theory of acceptance and use of technology

1. Introduction

Stroke is a common healthcare problem and one of the major causes of adult long-term disabilities in many countries [1]. Stroke patients receive care and rehabilitation from different care professionals from the acute phase to subsequent care at home. As rehabilitation plays a major role in patient care, patients in Stockholm County Council receive rehabilitation up to one year from a neurology team consisting of a speech therapist, an occupational therapist, a counsellor, and a physiotherapist after discharge from hospital. In stroke rehabilitation patients' problems are identified, goals and activities are defined and patients' progress towards the agreed goals is assessed [1].

Currently neurology teams in Stockholm County make home visits. During the home visits the team together with the patients and possibly their next-of-kin establish a paper-based rehabilitation plan. In a previous study, we explored the interaction between patients and different care professionals throughout the care and rehabilitation process in post-discharge stroke care in Stockholm and suggested designing an

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[1] Corresponding Author: Nadia Davoody, MSc Health Informatics Centre, Department of Learning, Informatics, Management, and Ethics, Karolinska Institutet, Tomtebodavägen 18 A, 171 77 Stockholm, Sweden. Email: nadia.davoody@ki.se

electronic care and rehabilitation tool to support patients in their rehabilitation [2]. A prototype system has been developed and is the focus of this study.

The web-based prototype provides features such as a rehabilitation plan, a calendar, a reminder function, a list of assistive tools, a list of different disabilities, patient associations' contact information, patient's own contact information, and a list of care providers and their contact information, etc. (Figure 1 – left side). The rehabilitation plan includes problems, goals, activities, and outcomes. The rehabilitation plan's different components are connected to each other using colour coding (Figure 1 – right side). Goals in the rehabilitation plan are divided into Simple and SMART (Specific, Measurable, Attainable, Relevant, and Time-bound). There are also review points to assess the patients' progress in achieving the goals. SMART goals include the Goal Attainment Scale (GAS), which is a visualisation of the goal achievement.

Figure 1. An overview of the care and rehabilitation planning tools' different features & the connection between problems, goals, activities and GAS using colour coding

The interactive care and rehabilitation prototype is intended to be used by the stroke patients, either together with the care professionals in neurology teams or independently. It is imperative to study the underlying factors that may influence the care professionals' acceptance and use of the tool as using it might affect their work routines and job performance. Therefore in this study we explore the perceived usefulness of the prototype from the framework of the Unified Theory of Acceptance and Use of Technology (UTAUT). According to UTAUT, there are four core components of behavioural intention and usage of information technology [3]:

Performance expectancy: "the degree to which an individual believes that using the system will help him or her to attain gains in job performance". **Effort expectancy:** "the degree of ease associated with the use of the system". **Social influence:** "the degree to which an individual perceives that important others believe he or she should use the new system". **Facilitating conditions:** "the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system".

2. Materials and Methods

Three focus groups [4] with care professionals in a neurology team in Stockholm County Council were performed. All members could not attend all focus groups due to their workload. The prototype was introduced and a short description of the study was given in the beginning of each meeting. Each focus group lasted approximately one hour and all meetings were audiotaped and notes were taken. All focus groups were

transcribed verbatim. The first focus group included a speech therapist; a physiotherapist; a counsellor in which their general view about the prototype was discussed. Two physiotherapists participated in the second focus group and in the third one, a speech therapist; an occupational therapist and a counsellor participated. The focus in these meetings was on the care professionals' perceived usefulness of the prototype and use of it. The data were analysed deductively and a predefined coding scheme based on the four concepts of the UTAUT model was used [4]. Questions regarding the content and functionality of the tool, its usefulness and impact on work routines, and acceptability were discussed with the participants during the focus groups. The data were coded by the first author. The meaning units were identified and codes and categories obtained from the data were discussed with the co-author.

3. Results

The results have been divided into three parts: 1. How using the prototype will affect the care professionals' job performance (Performance Expectancy); 2. Perceived ease of use (Effort Expectancy) for patients as interpreted by the care professionals; 3. Facilitating Conditions for care professionals. Social influence will not be discussed as we did not identify this kind of influence in this study.

3.1. Performance expectancy

Job performance: Participants believed that the tool would be useful in their work, but stressed that the main user should be the patient. "*The patient has control and when she/he needs information of any kind, she/he knows where to find it. You do not need to talk about things that the patient may be able to read through using this program at night when he/she likes to read.*" (Counsellor)

Participants believed that the tool would support the patient's own activation and cooperation between the team and the patient. "*It can also be a goal for the patient to reflect and to report their work, their part of the collaboration… I think that patients go from one rehabilitation actor to the next one and they have their rehabilitation plan in this program. So it is good*" (Counsellor).

Participants were receptive towards receiving more questions from patients due to access to the tool. "*It activates the person, and then the patient can use us in a slightly different way and it is positive.*" (Counsellor)

In addition, participants verbalized that the system could support collaboration between the team and other actors, e.g. in home care. "*They can e.g. see what assistive tools they have. Homecare staff can also see [what tools patients have]; 'oh well, you have this [assistive tool] - where do you keep it?*' "(Speech therapist)

Participants however believed that they would not be able to use the system themselves due to time limitation. They meant that using the system would decrease the time needed for their important job responsibilities (i.e. training with the patient). "*It should not take patient training time, because then you get stuck in something else than what you are there for…*" (Physio therapist 1)

Features affecting job performance: Participants mentioned that knowing emotional and cognitive hidden disabilities such as brain fatigue is of great importance for next-of-kin and homecare staff, and therefore the feature "My disabilities" was appreciated. According to the participants, the feature "My Calendar" could make the

planning process of home visits and each profession's responsibility more clear. "*I do like the calendar more than lists. [Patients] usually like to have one visit per day. I do not know but it might be clear here, once a week and if there are several categories, e.g. speech therapist will always be e.g. on Thursdays…*" (Physiotherapist 1)

Participants believed that having an overview of a patient's current assistive tools would help both patients and care professionals throughout the care and rehabilitation processes. "*The occupational therapists sometimes have 10 different tools and they can say: we returned this chair and why is this still here. Or the occupational therapist asks if this [a specific assistive tool] is ordered. So this can help the therapist and the patient. An overview of what they have*". (Physiotherapist 1)

Some participants mentioned that they already define SMART goals so it would not have a significant effect on their job performance. "*We already do [define SMART goals] in these rehabilitation plans we establish. It is not new, we do it already. The new thing is to enter it in a computer…*" (Physiotherapist 1)

Participants also believed that visualisation of goal achievement through GAS would make the progress very clear. "*It is also one advantage, it seems that the computer thinks like this and then a diagram/curve comes out and then you get a more visual image to see that one has made a progress and then it strengthens the patient in rehabilitation. Because we cannot do the same, to produce these things [diagrams]. This is a visual support.*" (Speech therapist)

3.2. Effort expectancy

Ease of understanding: Participants believed that colour coding used for connecting problems, goals and activities and having a specific colour for a specific therapist would make the rehabilitation process clear for patients. "*The colours are good, the colours work. It becomes clear in the calendar… It would be good if it was the same colour in the same area as well… I think you should know what each profession is working with by looking at the colours. It would facilitate for the patients as well.*" (Speech therapist)

Participants believed that the visualisation of the rehabilitation process containing problems, goals, activities and outcomes will facilitate the follow-up process. "*If you think about concentration problems and fatigue… then there is nothing left when we leave the patient's home. In the evening when the wife comes home and asks what we did today and what we worked with, then it is documented [here in the tool]… It may be a way to remind about the goal as well. That the goal is just there even without any curves or lines...*" (Counsellor)

Participants highlighted the importance of the information content in the tool for understanding the patient journey, while at the same time highlighting the importance of being able to adapt it to the individual patient. "*It is perfectly fine; the information is what they have asked for. I think the risk factors may be modified from person to person as some [patients] are very anxious… but usually we provide this information at one occasion, and here it is recurring…*" (Physiotherapist 1)

Ease of using the prototype: The participants believed that the prototype was quite complicated and patients with cognitive disabilities might have problems in using it. "*I think that the cognitive problems may become an obstacle for applying the program...*" (Counsellor). "*I have seen it twice, it is quite a few moments, it is a bit complicated, but it is possible to learn for sure. If one is motivated, he/she can use it*

every day for sure as it is planned. But there are many steps if you do not use it often. It might require a lot of training to get into the program." (Physiotherapist 1)

3.3. Facilitating conditions

Participants would like to have the program integrated with the patient record system as they believed that the goal setting process is quite advanced and they need to have access to the plan established at the patient's home. "*You should perhaps link it to one side, we should be able to see this [the rehab plan] from our record system but they [patients] should not be able to see the records.*" (Physiotherapist 1)

Participants mentioned that time and financial resources will affect the use of the tool. "*There are some economic issues; I think it's a question for an employer. What tools we should use...*" (Counsellor)

4. Discussion & Conclusions

Previous studies on user acceptance and use of technology considering UTAUT, have been done involving main end users of a system, e.g. [5]. We in this study, however, consciously decided to study the concept from the care professionals' perspective as we identified that the acceptance and use of the tool will affect both the work process of the care professionals and the patient's ways of experiencing the care and rehabilitation processes. One of the main challenges in care professionals' acceptance decision making has been the responsibility for the system. They believed that the system is the patient's tool and he/she should have the main responsibility for it. The main limitation of this study has been that patients have not been involved. Therefore, further studies are needed to explore the user acceptance and use of technology of the care and rehabilitation planning tool with patients as they are the main end users of the system. Another potential weakness is that the study is performed with a single neurology team. Exploring the user acceptance with other neurology teams would therefore be needed as well.

The conclusion would be that while care professionals mentioned some challenges such as time limitation for using the tool and issues related to the responsibility of the system, they were positive towards the tool and its potential usefulness in ease of understanding the rehabilitation process and support for collaboration.

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