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Patients and Organizations eHealth Services Model

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Abstract. The current Finnish public hospitals' eHealth services are organization-oriented rather than patient-oriented. Patients remain passive and use eHealth services that are designed by private or governmental organizations. Patients had little or no involvement in that process. This paper introduces a novel eHealth Services Model that can be used as a tool to capture the needs of both organizations and patients. Two eHealth services were used to verify and support the validity of the presented model. The first eHealth service features came from an existing Finnish eHealth service that was designed by a Finnish organization. The second eHealth service features have been derived from the collected patients' feedback. A survey was carried out to compare the selected two eHealth services features. The finding of this paper suggests that an eHealth service with features that capture patients' needs is favorable against the eHealth service features that came from a Finnish organization. The presented model is a long-term solution that can be utilized in designing and providing the right technologies and services that will continuously satisfy the needs of patients and organizations.

Keywords. eHealth, Services, Patients, Organizations, Model.

Introduction

Finnish public health care has undergone several positive developments, which have impacted the eHealth services offered through Finnish public hospitals. Current issues with Finnish eHealth services are rooted in the problems faced by patients using websites and patient portals. These websites and patient portals are established based on what organization can provide rather than what patients want to have [1]. Several studies [2, 3, 4] assessed and suggested solutions for Finnish eHealth services from the perspective of the organizations. This paper assessed and suggested solutions to Finnish eHealth services from the perspective of the patients. The merit of this paper is to introduce and verify the validity of a model that will bring both patients and organizations to work as a team to build eHealth services. The introduced model is called the Patients and Organizations eHealth Services Model (Figure 1).
The objectives of this paper are first to introduce an eHealth service model that will continuously capture the needs of both patients and organizations, and second to verify the validity of the Patients and Organizations eHealth Services Model (Figure 1).

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1. Methods

Two eHealth services features were used to verify the validity of the introduced novel Patients and Organizations eHealth Services Model (Figure 1). The first eHealth service features came from an existing Finnish eHealth service called Maisa, which was designed by a Finnish organization called Apotti. The Maisa eHealth service was selected because Maisa is used in the Finnish region Uusimaa that represents the largest population in Finland. Maisa provides the following eHealth service features: book appointments; communicate by sending messages or asking a question; perform other activities such as requesting test results, health summary, care plan, social services, coronavirus information, upcoming tests & procedures, a prescription renewal or referrals; manage access to data; realize other services such as links to other eHealth services from different providers and account setting. Maisa and other eHealth services are not necessarily known to all Finnish people. The features of the second eHealth service resulted from the collected feedback from 351 patients between the years 2014 and 2015 [1]. The features of the second eHealth service comprise: allowing patients to book, cancel or postpone appointments; send messages, videos, pictures; interact with their health care professionals; check their own health records; renew their prescriptions, remote consultations; request to choose their own doctors, find their hospitals, emergency services, send feedback; check who has access or uses their data, when and why; ability to see their health trends, news about current diseases, how to act, where to ask for help; record their activities & diet and see, pay or postpone their bills due date payment. The two eHealth services were presented as (A) and (B). The participants did not know that the features of eHealth service (A) came from an existing eHealth service nor that the features of eHealth service (B) originated from the collected patients' feedback. The participants were asked to assess features of both eHealth services (A) and (B) using the rating scales of 1, 2, 3, 4 and 5. Scale 1 represents poor service, scale 2 satisfactory service, scale 3 medium service, scale 4 good service, and scale 5 excellent service. A Microsoft online survey form was used to collect the participants' ratings. A text was added at the beginning of the Microsoft form to explain the participants the aim of the survey and that their data will be used anonymously for this paper only. The Microsoft form was communicated to the participants through several Finnish groups on Facebook and through the Tampere University Intranet news. The collected data comprised the participants' age, gender, regions of Finland they come from, employment status, new feedback, and ratings of both eHealth services (A) and (B). The use of an online survey fitted the purpose of this paper, as the considered eHealth service are provided through online platforms that require participants to have devices with an Internet connection. Accessibility of the survey was an important aspect, and the survey content was designed in compliance with AA-level criteria laid down in the Harmonized European Standard EN 301549: 2019 Accessibility requirements for ICT products and services, Clause 9.

2. Results

The survey was running from 19th of April 2022, when the first participants were active, until 10th of June 2022, when the last participation was received. Thereafter, no input from new participants was recorded. The survey was formally terminated on the 22nd of June 2022. Answers from in total 177 participants' were collected. Only one participant

among the 177 participants declined to participate in the survey as this participant expressed his/her concerns about safety such as hacking or spam through Facebook. From the resulting 176 participants, 34 feedbacks were collected. The eHealth service (B) was favorable and scored on average 4.54 out of 5, whereas the eHealth service (A) scored on average 1.96 out of 5. The participants' age distribution showed that 92% of participants were between 18 and 61 years, and 8% over 62 years. The participants' gender distribution showed that 49% represented women, 47% represented men, other and undisclosed genders were 2% each. The participants' employment status results were 50% employed, 31% were students, 15% were retired, 15% were unemployed and 1% represented the other employment status. The overall results among participants showed that the eHealth service (A) features scored on average 1.96 out of 5 and the eHealth service (B) features scored on average 4.54.

3. Discussion

This paper introduces the following Patients and Organizations eHealth Services Model Figure 1:

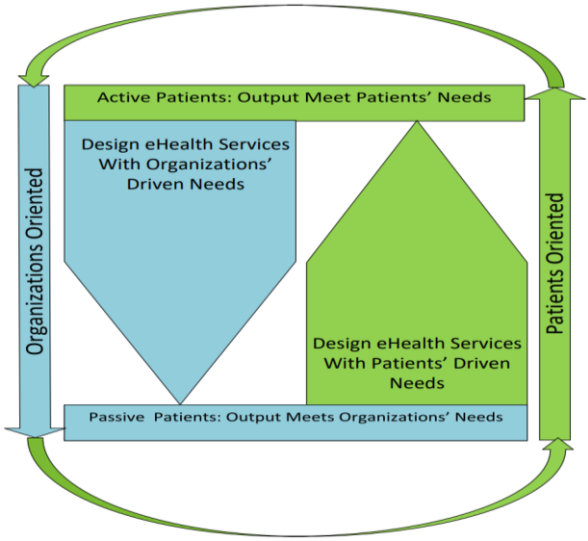

Figure 1. Patients and Organizations eHealth Services Model.

The introduction of the Patients and Organizations eHealth Services Model is an attempt to enhance the way the Finnish hospitals eHealth services are offered. The current Finnish hospital eHealth services are organizations oriented rather than patients oriented. Organizations-oriented eHealth services follow a top-down approach (blue color) and their design is driven by organizations' needs. In a top-down approach where the patients are passive, patients have almost no say in how the eHealth services are designed, offered or organized. In the bottom-up, patients-oriented approach (green color), the design of eHealth services is based on patients' needs and the patients are active participants and drivers of the eHealth services. Organizations and patients need each other in delivering the appropriate eHealth services that meet the needs of both organizations and patients.

The results used to verify and support the validity of the introduced model in this paper are reliable and unbiased as the participants did not know that the features of eHealth service (A) originated from an existing eHealth service offered by a Finnish organization. Also, the participants did not know that the feature of eHealth service (B) originated from patients' feedback. Uusimaa and Pirkanmaa represent almost half of the participants. Pirkanmaa has the highest participants' records as the survey was published in Tampere University Intranet. Most of the participants from Tampere University do not originally live in Tampere.

The regions, age, gender, employment status distributions, and new feedback in this paper are considered enough to verify the validity of the model presented in the Figure 1. The results showed that the eHealth service (B) was favorable and scored on average 4.54 out of 5, whereas the eHealth service (A) scored on average 1.96 out of 5. Furthermore, 34 participants provided feedback on the eHealth services through the survey demonstrating that Finns are highly interested in being an important active player in eHealth services. The provided feedback interestingly suggested combining both features from eHealth service (A) and eHealth service (B). Additionally, due to the COVID-19 pandemic, the feedback touched on the vaccine alternatives related to COVID-19, flu, and ticks. This is a sign that Finns are highly interested in finding information and guidance about health issues in the well-established eHealth service where they will be engaged and empowered to present their needs.

4. Conclusion

eHealth services are inadequate if they are not known to patients and do not fully meet their needs. Organizations that will design eHealth services, although they will use state-of-the-art information technology, they are required to collaborate with patients and continuously capture evolving needs of the patients. The Patients and Organizations eHealth Services Model (Figure 1) is the framework that can be utilized to capture the needs of both patients and health organizations. Furthermore, hospitals will be able to gain the trust of people and equipped with powerful tool to manage the health of their patients, overcome the abundance of misinformation in social media [5] and fight against current or future pandemic.

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