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Electronic health services for cardiac patients: a salutogenic approach

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Abstract

Patient-centricity is a name given to the on-going transformation in health care delivery. The term is widely used and it has been given different interpretations in relation to the context of its use. These interpretations emphasize aspects such as empowerment, seamless chain of care, and even responsibility; how it is divided amongst the service provider and the patient. Regardless of the interpretation and the context of use, one thing is constant; a genuine desire to support the patient's health related endeavours in a field that is fragmented and becoming increasingly technology-oriented. In order to support the patient in this field, a comprehensive approach to health is needed to capture nuances of everyday life outside singular health related transactions (such as appointments, laboratory visits, etc.) and technology. This article looks into some well-established theories used in depicting such a comprehensive view to health and well-being, and conceptualizes their applicability to real-world electronic health services. The article reports preliminary results in the form of proposed new functions, ideas on the applicability of the theories and describes the outline of the iterative development process. The findings of this article base on development of electronic health services for cardiac patients performed in an on-going project, which is executed during 2011–2013.

Keywords: services, patients, personal health records, personal health services, information systems

Introduction

For various reasons, societal and economical alike, the contemporary health service provisioning emphasizes active participation of the patient. Recurring themes in discussion that revolves this topic include empowerment, trust and changing nature of patient-physician relationship [1-3]. Regardless of the chosen viewpoint (e.g. philosophical, professional, managerial, etc.) to the topic, the discussion typically highlights one fundamental aspect; the transforming role of the patient.

What we see today are the changes in the fundamentals of the role. The underlying values and perceptions are in constant turmoil and for its part this has led to investigations on the applicability of the role: is the role of the patient a sufficient unit of analysis in relation to new service provisioning models, or should alternative interpretations be brought up? In a national project MyWellbeing that ended in 2010, the role of the citizen was used as a starting point in analysing new and emerging health care services [4].

The purpose of using this viewpoint was to highlight two issues. Firstly, the health care services of today are becoming more and more proactive by nature, bordering services more commonly associated with well-being [5]. Effectively, this means that the services are not associated with a specific ailment or disease, the scope of the services often extends beyond a health encounter, or a practice. It follows from this that it is not always viable to categorize services solely on the basis of their health impact or designated provider. In terms of health and well-being, the relevant services can be related to work, hobbies, or other extracurricular activities.

Secondly, health is always a subjective matter. Patients and their ailments differ from each other. This analogy is universal; the individuals differ from each other also in terms of social status, cultural background, and knowledge. Thereof the relevant health information is individualistic; contextualized by its use and user. In order to highlight this aspect, and to take a standpoint on the ownership of the health and well-being related information, the viewpoint of a citizen was adopted and used as a base role in relation to other, more service-oriented ones [6].

As a tool for managing health and well-being related information, a concept of Coper was introduced in the project [4, pp. 19-23]. Coper, which was effectively a next-generation Personal Health Record (PHR) solution, encapsulated information and services in a citizen-centric fashion, highlighting issues such as service provider management, process level integration of individual health and well-being related event, and creation of meaningful assemblages of information, to be used by the citizen in health and well-being related efforts.

The work on the citizen-centricity has continued after the MyWellbeing project. The current work on the theme focuses on supporting health related endeavours of cardiac patients (e.g. individuals who have undergone a heart valve surgery, bypass, or some other health episode). The work is performed in a national project called Pump (Pumppu in Finnish) in which a limited set of functions of the Coper concept are piloted as a part of electronic health services of the city of Turku. The project provides a concrete mechanism for testing envisioned functions, such as complementing Current Care Guidelines (CCGs) of clinical domain from the citizen side as a part of Citizen Pathways (CPs) [7].

Electronic services for the cardiac patients

The Pump project (2011–2014) is a larger framework for developing citizen-centric services to the field of health and well-being services in Finland. The project, funded by European Regional Development Fund (ERDF), is divided into five operational units. Each unit focuses on seamless service provisioning from a different perspective (such

as, families with children who have neurological disabilities). In the following, the focus is on cardiac patients, a perspective selected to the Coper-pilot subproject.

The subproject is executed with an industry partner. One result of the project is an actual extension to the existing electronic health and well-being services offered by the city of Turku. The development of the extension is supervised by the assigned domain-specialists (doctors, diabetes nurses, etc.) and by the research and development unit of the Municipal Social Services and Health Care Department. During the initial discourse on the viability of the project, one question in particular was brought up when the original concept of the Coper was compared to the existing electronic health and well-being services offered by the city:

"How to activate and motivate the citizen to take a more active role in one's health and well-being related efforts?"

This question remained in the core of the subproject implementation and it was also used in analysing the current state of electronic health and well-being services in the city of Turku.

Current state of services

The city of Turku launched its first electronic health care service (eTerveyspalvelu) in November 2004. The service was used in student health care [8] and the early versions of the service included an electronic anamnesis, which was used prior to physical examination, and Short Message Service (SMS) application that was used for sending invitations to the actual examination. During 2004–2012 the service had undergone only few minor revisions and the offered services had remained practically same since the day one. These included:

1. Management of contact details (address, etc.);
2. Making appointments with the personal doctor;
3. Secure messaging with the personal doctor;
4. Electronic forms, including:
    a. Anamnesis;
    b. Prescription renewal;
    c. Blood sugar follow-up;
    d. Heart pressure follow-up;
    e. Questionnaire for a first-year student.

In general, one recurring problem with electronic health care services is the lack of best practices in effective implementation and deployment strategies [9]. This problem is particularly evident in the case of electronic health care services of the City of Turku; implementation and deployment of the four core functions took nearly eight years. With this in mind, the changes in the technological maturity of online services are particularly evident when the current state of the electronic health care services is examined. The ravages of time have eroded the appearance and usability of the service which is nearly a decade old. Even though in the case of electronic health care services the timeliness of the employed technologies is not a value in itself, the technology has advanced immensely during the life cycle of the service.

In addition to outdated technology the services fall short on another, more philosophical aspect, as well; they are inherently *profession-centric*. The offered services are implemented from a professional mind-set, not that of a patient (or a citizen). This characteristic is particularly evident if the nature of the implemented services is exam-

ined more closely. They serve primarily the information needs of the professional, not that of the patient. The information is not integral to the every-day well-being of the patient.

A new approach?

In order to offer electronic services that are more citizen-centric, a fresh approach to the service provisioning is required. The citizen should be considered as a centrepiece in the board that is the health system of today; the organization of people, institutions and resources behind the offered services. In the context of the original MyWellbeing project, this ideological insight into the service provisioning was called "*Copernican*" in contrast to profession technology-centric services of today. In literature, the latter is referred "*Ptolemaic*" [10], complementing the ideological juxtaposition.

The ideological insight of citizen-centricity stemmed from a realization that the patient trajectory is changing; care is complemented by prevention and health is complemented by well-being. This implies that the health related events are often triggered before a formal patient-physician relationship exists and the events may recur, or even extend from a single incident to a life-long "project". Addressing challenges related a life-long project, such as diabetes, often requires lifestyle changes, and a comprehensive insight into individual's health and well-being.

One result of this change in the patient trajectory is that the role of the patient is no longer a sufficient unit of analysis. Depending of the insight into the offered services, the alternative interpretations on the current role of the individual may range from a consumer to a citizen [6], of which the latter is used as a unit of analysis in the remainder of this article. This chosen viewpoint is used to highlight changes in the trajectory, and to emphasize service-provider neutrality that exists outside singular service transactions.

Health, particularly in the chosen viewpoint, is fundamentally personal; it is more than a view on bodily functions and ailments. In this, the citizen-centric viewpoint owes to the reflections of a Swedish philosopher Fredrick Svenaeus who defined health as a state of "*homelike being-in-the-world*" [11]. In this metaphor, Svenaeus questions a biomedical view to medicine arguing that the goal of medicine is to promote and restore health in a way that the individual is again in "tune" with the surrounding world [12].

His phenomenological and hermeneutical view on medicine that bases on the earlier works by Martin Heidegger and Hans-Georg Gadamer (ibid.) is in similar lines to those of Aaron Antonovsky who uses concepts of "*Salutogenesis*" [13] and "*Sense of Coherence*" [14] to characterize a more comprehensive view on individual's health and well-being. "*Salutogenesis*", as an opposite of "*Pathogenesis*" is used to describe a view in which the focus is on factors that support health and well-being, not the biomedical factors behind a specific ailment or condition.

"*Salutogenesis*", a novel concept of its time and a well-employed approach to health promotion of today, focused primarily on the problem solving and secondarily to the available resources [15]. One of the unique characteristics of the concept was the outlook on the health as an axis, or as a continuum, with two absolute boundaries; total health and total illness. To support transition from illness to health, Antonovsky presented the concept of *General Resistance Resources* (GRRs) that were essential in maintaining and developing health [15-16].

GRRs are multifaceted and unbounded; they can be of psychosocial, genetic or even constitutional by nature (e.g. knowledge, intelligence, personal coping strategies, etc.) [15,17]. The only truly defining factor is that the resources are deeply personal, embedded and originating from one's character and ability. These resources are essential for comprehending and coping with the current situation, gaining an insight to life depicted as "*Sense of*

Coherence" (SoC), or more formally: "a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence […]" [14].

The "*Sense of Coherence*", as a "*Salutogenic*" intake on life, is a well-theorized concept in Antonovsky's works. The primary components behind the concept are comprehensibility, manageability and meaningfulness of the surrounding world [15], aspects that are used for aligning the GRRs in terms of achieving the positive orientation to life, or using Svenaeus's concepts, the "*homelike being-in-the-world*". On a practical level, SoC has been used in formulation of life orientation questionnaires and scales, such as in the SOC-29 [16,18].

The utilized approach to the development of electronic health services stems from the vision of a balanced life, present in the works of Antonovsky and Svenaeus, and from problems with the vision. These problems, or "*fractures*", are health related affairs that disrupt the SoC or "*homelike being-in-the world*", eventually leading to utilization of GRRs in order to restore the equilibrium. These "*fractures*" may originate from the simples mundane acts, such as from a realization that taking the stairs to work has become laborious or that the clothes that were comfortable are no longer fitting.

In the employed theoretical framework, a "*fracture*" leads to a project which primarily aims to restoring the equilibrium in one of the two ways. One, the "*fracture*" is mended and the individual is again in "*tune*" with the world (e.g. loss of weight). Two, the orientation to life changes and the "*fracture*" is integrated to one's perceived self-image (e.g. the individual accepts that the he or she is obese and does nothing). If the project is reconstructive by nature, it is called *purposeful*. In this, the *purposeful project* is more "*dynamis*" than "*statis*" as Svenaeus implies it [11]; individual's personal experiences change over time and the ultimate goal of the project is dynamic, moved constantly by personal resources and even convenience.

The proposed functions

Ideally, the developed services help the cardiac patients on two levels. Firstly, the services support in understanding the "*fracture*", nature of the ailments that brought "unhomelikeness" in their wake. Secondly, the services activate the patients to use their inherent GRRs, and the resources offered by the service, in creating (and modifying) *purposeful projects*. On a conceptual level, this is enabled with the following functions that were proposed to be included in the new electronic services:

1. Access to reliable and relevant health information;
2. Secure messaging with the health service providers;
3. Personal data (name, address, etc.) and access management;
4. Service transactions management (calendar and scheduling);
5. Online care diary (controlled by the citizen);
6. Peers support services;
7. Access to patient information in primary healthcare records;
8. Self-care notes and observations.

While some of these functions are already present in the electronic services offered today, the "*Salutogenic*" insight is particularly visible in the way the services are reformulated. The existing services are "unidimensionally" implemented; the role of the patient is seen as passive recipient of care whereas the proposed functions are envisioned to enable interactive patient counselling. In the proposed functions the patient is seen as a co-producer of health and enabler of proactive interventions as envisioned by Hietala et al. [5].

One example of this approach is the online care diary. The embedded decision making rationales of the function were designed to be proactive. For example, if the patient writes down an observation on pain or numbness in an upper limb, it is seen as a potential trigger event that leads to further interaction. These could include a) notifications to the health service provider, b) tailored patient instructions, and c) start of an interactive solution[1] that can be used for a step-wise analysis of the symptoms. In this, the envisioned services have properties more common to Decision Support Systems (DSSs) of the clinical domain [19–20].

The implementation

The actual implementation of the electronic health care services for the cardiac patients is currently an on-going process. According to the industry partner, the first prototype will be available for testing in March, 2013. At the moment, the Coper-pilot subproject is in a stage of demarcation and elimination; what functions, and to what degree, will be implemented within the timeline of the project. The current estimate is that a limited version of the online care diary will be included in the first prototype.

The second prototype will be launched in the turn of the year 2013–2014. It will contain new functions, and functions revised on the basis of feedback from the cardiac patients. While the first prototype will focus on limited core functions and self-reporting, the second prototype will employ a different approach. The second prototype will focus on patient counselling and co-operation; how purposeful projects can be initiated on the terms of the patient. In this, the implementation will employ, amongst others, functions more common to Motivational Interviewing (MI) [21] in order to bring parts of the envisioned concept to life.

MI as a method of patient counselling and motivating change, bases on the notion of a respectful rapport between the patient and the physician. Unlike other more “harsh” or externally-driven methods for motivating change, decisions about care and treatment are done by the patient, and the role of the physician is more informative. In this, MI lays a ground for an autonomic relationship between the patient and physician by Hogg [22]. In addition, MI is also evocative by nature [23] calling for patient’s own motivation and commitment. In this, MI complies with the depicted theoretical framework, providing a practically oriented approach to its implementation.

Conclusions

Implementing solutions from a citizen-centric point of view is challenging but potentially rewarding. Solutions that promote the citizen into the centre of health services and activate individual’s resources potentially reap a harvest of increased health benefits at the same time lowering the costs of the health care delivery. In implementing these kinds of solutions, outlook on health as a comprehensive concept, not as an absence of illness, is of the essence.

Theoretical frameworks that comply with this outlook have been defined and tested on practice on many occasions. In Finland, concrete results of this iterative work in the field of electronic services include: the Finnish national portal for accessing public online services[2] and of late, the electronic self-care service platform Taltioni[3].

[1] cf. Symptom Checker by WebMD. [Cited 24 Jan 2013]. Available from: http://symptoms.webmd.com/

[2] Suomi.fi [Cited 24 Jan 2013]. Available from: https://asiointitili.suomi.fi/Language/Set?language=en

[3] Taltioni. [Cited 24 Jan 2013]. Available from: www.taltioni.fi/en/

However, an overall paradigmatic change in the health care delivery has not been achieved; the health care principally bases on the idea of pathogenesis; disease and reasons for it. Similarly, the health care service provisioning remains primarily profession-centric; controlled by the health care professionals who are in a position of authority in matters of health.

While there is strong and natural merit to profession-centric approach and even to idea of pathogenesis, complementing viewpoints have found their way to health service provisioning and their viability is tested on practice in the Coper-pilot subproject. While it is difficult to analyse the final outcome of the project due to its experimental and iterative manner, the goal can be set on an ideological level. In order to claim a success on this level, the implemented service will help the cardiac patients to change their "*fractures*" into *purposeful projects* on their own terms. In turn, these projects will help the citizen in achieving equilibrium in life.

Hopefully, the implemented functions of the electronic health services will have a sufficient merit in the eyes of the health care professionals and the cardiac patients, and the principles will be deployed in other specialty areas, such as diabetes, where personal health aspirations can also make a real difference.

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