Nursing Telehealth, Caring from a Distance

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Abstract. Tele-technology in the health care system is prognosed to be able to produce better health, better care at lower cost (Triple aim). This paper will discuss the validity of this prognosis, which in many ways is considered as some sort of diagnosis of the conditions concerning triple aim in relation to Tele-technology. Tele-technology in the health care system covers three different types of technological settings: telecare, telehealth and telemedicine. This paper will disclose the different meanings of telecare, telehealth and telemedicine and discusses how nursing informatics can accomplish and gain from this disclosure. Theoretically and methodologically the paper is based on post-phenomenological readings and reflections, where use, practice, users, participants, values and knowledge systems are addressed on an equal level in order to understand technology and how we act appropriately through and with technology.

Keywords. Telehealth, triple aim, 7 E's, values, post-phenomenology

1. Background

During the last decade we have witnessed the launch of myriads of tele-medicine or tele-care projects. In Denmark alone a recent mapping revealed the existence of 372 projects [1]. Few of them have been properly evaluated, and for those who have there seem to be a limited impact on the triple aims: better care, better health and lower cost [2][3]. In order to improve impact and also increase sustainability we draw attention to some fundamental preconditions for designing and implementing tele-technologies in health care, and discuss these issues in relation to fundamental thoughts in a Danish telecare project – the Epital.

2. Introduction and theoretical anchor

The Dutch researcher on socio-technical understanding of health informatics Jeanette Pols writes in "Care at a Distance" [4] that hands are not necessarily warm and technology is not necessarily cold. We do fully concur on this polyvalent statement where is in-built a request for critique and reflection in relation to use, practice, participants, values and knowledge systems, and furthermore how technology affects all of this. This means that we are not going to fall into the pit of romanticism on how we should always strive towards direct physical and psychological contact in between caregivers, caretakers, citizens and patients. On certain occasions and in certain contexts technolo-

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gy provides better care than humans, for a variety of reasons. Telecare, Telehealth and Telemedicine have different roles, qualities and potentials in relation to care and comfort of the citizen/patient and furthermore in relation to how professional staff experience their everyday life work practice. When we think of the development and implementation of tele-technology in the health care system it is paramount that it is not only the citizen/patient who experience better care, better health at lower cost, but also the professional staff should through and with technology have the possibility of perceiving what we have coined as empowerment, enhancement and emancipation [5][6][7]. In order to reach that we have to apply engagement, embodiment, empathy and enactment, which are ways of moving on the path as healthcare professionals in order to achieve the multiple aims of empowering, enhancing and emancipating both for oneself and for the receiver of the healthcare service, e.g. the citizen/patient.

The American philosopher Don Ihde first introduced post-phenomenology as a philosophical position on technology in 1993 [8]. Ihde tells us that technology is multistable, which means that our relations to technology changes according to use, context and understanding. There is no essence in technological artefacts. They constantly and dynamically co-constitute together with humans in new configurations. Therefore technology is not per definition something in itself, which we should consider the moment we construct and design technology. Humans are in this same perspective neither something in itself. We change and become something new through our interaction with technology. This is why we cannot from the outset classify technology as cold and human hands as warm, and the same thing goes for the hybrids that are created in the conjoinment of humans and technology.

Lars Botin introduced to the methodological framework in [5] where he writes about the 7 E's: engagement, embodiment, empathy, enactment, empowerment, emancipation and enhancement. Engagement, embodiment, empathy and enactment are means, whereas empowerment, emancipation and enhancement are aims. Four of the concepts are already familiar to the profession of nursing and nursing informatics, i.e. engagement, embodiment, empathy and empowerment, whereas enactment, emancipation and enhancement seldom occur in research or actual practices. It is important to notice that as if the methodology is co-constitutional then professional staff, e.g. nurses should experience empowerment, emancipation and enhancement through the use of tele-technology, as should the care receiver, e.g. citizen, patient, relatives and/or informal caretakers.

We have dealt with this in [9], where we indicate that all of this should happen on an individual and personal level, because engagement, embodiment, empathy and enactment is an individual experience and manifest as a sensation in the singular individual. In philosophy of technology this enterprise is called scaffolding, where we build scaffolds in order to construct structures that protects, support, maintain and renew fragile and vulnerable bodies and identities of humans [10][11]. The scaffold is a fairly mechanical and instrumental thing made out of standardized components, which fit neatly together, and the foremost quality of the scaffold is that can be assembled in an infinity of ways in order to scaffold what is to be scaffolded. It is not a one size fits all construction, but exactly co-constitutional where scaffolds transform and change in relation to the scaffolded and the scaffolded is equally affected and influenced by the scaffold as work/practices are performed.

Empowerment and enhancement are aims that can be reached by procedures and decisions made by others in relation to the individual. The citizen/patient can be empowered and enhanced by technology without actually doing something on her own. It

is different when it comes to emancipation, because we can set up possibilities for emancipation, but this does not necessarily means that the individual will become emancipated. In order for that to happen it requires an act of will and furthermore knowledge on what it actually means to become emancipated, which of course means that citizens/patients are expected to reflect on their actions and practices and furthermore to seek knowledge about the impact and consequences of their actions and practices.

3. Methods and material

Technical reports and magazine news articles delivered input for a summary description of the Epital initiative. This description has been elaborated through an interview with one of the Epital key persons. The description has been approved for correctness by the Epital organization.

The Danish telecare project – the Epital is an attempt to redesign the structure of the health system to achieve a more accessible, coherent and efficient service by means of virtualizations of selected functionalities regarding the chronically ill person. It is described as a shift in paradigm from the profession dominated health care system where the citizens turn to the health care institutions when they decide they need it, or in special cases where they are so miserable that others decide they need acute attention by health professionals; to a new citizen centred paradigm where the citizens monitor themselves on vital parameters and share the measurements and information with health care professionals. To make this work the citizens must go through an inclusion process to join the Epital network. On a conceptual level the inclusion naturally require the citizen to be able to monitor his or her own health state in a way that also appear meaningful to health professionals who eventually can be involved to act. On an operational level, which for the time being only includes citizens with COPD, the citizens monitor four quantitative measures (FEV1, Heart Rate, O2 saturation, and temperature), and three qualitative parameters (breathing difficulties, cough, and secretion). On the basis of the self-monitoring the health professionals can triage the patients from the Response Coordination Centre (RCC). The RCC is staffed with a trained e-nurse who proactively can initiate treatments rather than allowing the conditions to exacerbate to a level, which requires more severe intervention. The e-nurse can ask the citizen to adjust their medication or refer to an e-physician who can initiate new medication from the medication toolkit located at the citizens home, or pay a visit to the citizen's home in severe cases.

The Epital care model consists of 6 steps:

Independent living: A citizen included as a member of the Epital who has COPD, are monitoring his/her conditions, but are functioning well, and in daily activities are not utilizing any health care services, but the Epital service keep an eye on their measurements and can intervene if necessary. These members are equipped with a medication box with a selection of drugs they are not taking, but could potentially need if symptoms exacerbate.

RCC activated: If the citizens experience an exacerbation that demands a professional response they call the RCC where an e-nurse can advice or refer to an e-physician who can e.g. tell the patient to take some Amoxicillin from their medication box. In this stage the citizen are fully mobile, and could in principle be located anywhere provided

they have their Epital hardware (Tablet computer, and devices to measure FEV1, Heart Rate, O2 saturation, and temperature) with them, and they have an Internet connection.

Acute e-nurse visit to citizen's home: In cases where symptoms gets worse or there is an aggravating anxiety the e-nurse from the call center can pay a visit to the citizen's home to initiate further diagnostic procedures. In this case the citizens will naturally have to be in their home.

e-physician "outmit" the citizen: When the nurses pay a visit to the citizen's home they also bring further medication that they can give to the citizens after consulting the e-physician. In this case the citizens are "outmitted" to treatment in their own home and in many cases a rather advanced treatment is performed in the citizen's home.

Decentralized admission to a sub-acute bed: In the case of further exacerbations the e-physician can admit the citizen to a sub-acute bed in a municipal institution, which is staffed 24 hours. Here it is possible to give oxygen and give more advanced treatment. This is the last decentralized step.

Admission to a specialized hospital department: Citizens who are demanding even more advanced treatment are admitted to a specialized respiratory department at a larger hospital.

4. Results and discussion

The Epital is, as the concept refers to, an alternative or virtual hospital, wherein is present humans and technologies that appears in normal hospitals as well. There are doctors, nurses, patients and toolkits for measurement and treatment. However, the differences are the notion of distance in between humans and the proximity of technology, both for the caretaker and the care receiver. This means that the technology of monitoring and eventual treatment mediate trust, comfort and care. The proximity of technology also mediates the possibility of humans to get close very quickly, because the e-nurse from the RCC can reach the individual patient in very short time and produce professional care in situ. The e-nurse can also decide to activate the classical hospital by eventually hospitalizing the citizen.

In order for all of this to succeed certain preconditions are required, which has to do with the concept of inclusion. Inclusion is a classical virtue that we ask for in order to promote justice, equity and democracy. In order to be and feel like a citizen these frameworks are needed. Inclusion, in the Epital requires certain physical and technological capacities from the citizen (and the nurse). Empowerment, emancipation and enhancement through and with technology is hence dependent on these capacities, which of course create some issues concerning justice, equity and democracy, because it means that the weak and incapable is left exactly weak and incapable. At the same time the majority of citizens with COPD will experience empowerment, emancipation and enhancement through technological interaction, because she will feel in control and capable of managing her health in an interdependency with technology.

We are of the opinion that the life of COPD citizens are not independent, because in order to remain citizens with normal everyday lives they are intertwined with technology – they are *inter*dependent. Empowerment, emancipation and enhancement are the results of this interdependency, wherein the e-nurse is also part and profit.

Inclusion should be broadened to widest extent possible in order to support and change the condition of the weak and incapable. In order for this to happen we have to consider how to engage the weak, how the weak can embody technology in different

ways than the stronger, how we with empathy can embrace and help the weak and finally how we enact the set up in order to create technological change. In other words how do we construct a scaffold that fits the weak in order to make way for inclusion?

We think that Ihde's notion on multistability could be of use. The citizen reads and understands the results of monitoring and reacts accordingly. This human-technology relationship is classified as a hermeneutic one, where the citizen reads the world (herself) through technology. The weak and incapable could experience empowerment, and enhancement in relation to her condition through technology if we applied one of the other relations that Ihde has classified. In the alterity relation, humans change through technology. A man becomes a gunman through interaction with the gun. The COPD patient becomes a COPD citizen through interaction with the embodied tele-technology. This means that the role of the e-nurse also changes and there is a shift from the paradigm of telehealth to telecare, where the e-nurse is monitoring the citizen and through engagement and empathy (classical virtues of the nursing profession) is responsive to empowerment and enhancement of the citizen. Unfortunately, emancipation is not at stake in this case, because the citizen is dependent on the e-nurse, hence she is in control and managing the life of the COPD citizen.

The triple aim of better health, better care at lower cost is within reach by focusing on the values of empowerment, emancipation and enhancement, where tele-technology plays a crucial role because interdependent with humans hence enhancing the possibility of warm and meaningful relations between humans through and with technology.

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