



Professional values, technology and future health care: The view of health care professionals in The Netherlands



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ABSTRACT

Perceptions and values of care professionals are critical in successfully implementing technology in health care. The aim of this study was threefold: (1) to explore the main values of health care professionals, (2) to investigate the perceived influence of the technologies regarding these values, and (3) the accumulated views of care professionals with respect to the use of technology in the future. In total, 51 professionals were interviewed. Interpretative phenomenological analysis was applied. All care professionals highly valued being able to satisfy the needs of their care recipients. Mutual inter-collegial respect and appreciation of supervisors was also highly cherished. The opportunity to work in a careful manner was another important value. Conditions for the successful implementation of technology involved reliability of the technology at hand, training with team members in the practical use of new technology, and the availability of a help desk. Views regarding the future of health care were mainly related to financial cut backs and with a lower availability of staff. Interestingly, no spontaneous thoughts about the role of new technology were part of these views. It can be concluded that professionals need support in relating technological solutions to care recipients' needs. The role of health care organisations, including technological expertise, can be crucial here.

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1. Introduction

Because of the increasing number of older individuals and a higher prevalence of chronic medical conditions [1], care utilisation and health care expenditure have risen considerably in recent decades [2]. Consequently, smart solutions to overcome or decrease health care expenditure are of utmost importance. The use of health care

technology is regarded as a possible solution to meet these current and future challenges. Much effort, for instance, in European projects, is being made to financially support initiatives [3].

Nurses have a long tradition for using technologies and medical technical aids have made their way into care, mostly in clinical settings. In the late nineties and beginning of this millennium also telecare rose. It started with home electronics, mostly alarm devices such as smoke, gas or flood detection. Along came more specific devices for the guiding and monitoring of patients, such as fall detectors, pressure mats and door alerts [4]. Doctors are these days able to monitor patients from a distance, for example their heart conditions with sensor technology. Together with the

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evolving opportunities of technology at lower costs, such as video interaction between care provider and patient, the vocabulary from home electronics and telemedicine changed into broader terms like telehealth or ehealth [5].

Despite the rapidly increased investments and the relatively long tradition of using technology in care, the widespread and routine use of technology in chronic health care is still rather disappointing [6]. One of the reasons that has been brought forward, regards the involvement of many different stakeholders, including care recipients, health care professionals, engineers, policy makers, and managers in chronic health care [7]. Professionals providing care, and care recipients receiving care (within the domain of health care also referred to as patients, clients or residents), can be considered key figures in the implementation and use of technology. Factors attributable to technology acceptance barriers, both in health care professionals [7–9], and in care recipients [10], have been distinguished which explain why technology implementation has not always been successful.

For the understanding of technology acceptance, several models are available. Literature is dominated by the Technology Acceptance Model (TAM) [11] and the Unified Theory of Acceptance and Use of Technology (UTAUT) [12]. TAM focuses on the intention to accept technology. This model is widely used as the theoretical basis for many studies of user technology acceptance, and was developed for the specific domain of human–computer interactions [13]. The model is used to predict the attitudes and behaviour of users of technologies, based on two key variables: perceived usefulness (PU) and perceived ease of use (PEOU). PU is the individual's perception that using the technology (for instance, ehealth) will enhance job performance, and PEOU is the individual's perception that using the technology will be free of effort [11]. These two variables explain 40 percent of an individual's intention to use a technology in a variety of contexts, including health care [13].

Although TAM proved to be useful in predicting, and perhaps explaining, care professional's acceptance and use of health technology, there is room for improvement [13]. The UTAUT is a technology acceptance model formulated by Venkatesh et al. [12]. Compared to TAM, the construct of 'intention to use' is expanded in UTAUT. The UTAUT gives more insight in user intentions by adding two additional variables: social influence and facilitating conditions. The theory contains four key constructs for acceptance (i.e., performance expectancy, effort expectancy, social influence, and facilitating conditions), which are direct determinants of usage intention and behaviour. Moreover, gender, age, experience, and voluntariness of use are postulated to moderate the impact of the four key constructs on usage intention and behaviour [12]. Validation by Venkatesh et al. of UTAUT in a longitudinal study found it to account for an impressive 70% of the variance in behavioural intention to use [12].

All these studies and models of acceptance of technology in health care, do not consider the professional values and the relationship of these values to the actual use of technology. Moreover. Most of the technologies care professionals have to use, are not voluntary. Innovations, like

health care technology, which are compatible with values, organizational or professional standards and perceived needs are, in general, more readily used by the care professionals [14]. Therefore, a more subtle explanation of one of these alleged reasons, i.e., professional values and standards, is needed.

There are several trends in health care that point into a profound change in roles of health care professionals, closely related to their professional values. Especially in the treatment of chronic diseases, this is an important issue. One such trend is that patients have more access to health information and participate in care decisions [15]. A related issue is that responsibility of informal care has become more important [16]. Technology supports these developments and therefore can be disruptive [17]. In other studies, it has indeed been suggested that care professionals are afraid that their roles as care providers might become redundant because of the use of technology [18]. Furthermore, technology, as compared to conventional and personal care, is often thought of as 'cold' versus 'warm' care [19]. In other words, care professionals might nourish professional values and moral attitudes, which might, in turn, intuitively influence use of technology. If these values are in conflict with the use of the technology at hand, implementation might become less successful.

In studies on job satisfaction in health care professionals, these values also proved to play an important role. For instance, one of the determinants known to be strongly related to professional values and job satisfaction in care professionals, is their patient orientation [20]. In studies addressing patient-centred interventions, job satisfaction of care professionals increased when individual care recipients' needs were met in a favourable manner [21]. Barnard [22] explains that technology can pose conflicting demands on nurses while attending to these needs, for instance, because medical alarms and intravenous pumps or telephones require immediate action, even while spending valuable time with another patient.

Unfortunately, the majority of studies regarding the successful implementation and use of technology has been focused on specific technologies; e.g. the use of telemonitoring systems [23]. To our knowledge, no study has yet investigated the views and ideas of care professionals regarding the implementation and use of technology as a whole; i.e., without focussing on one or more specific technologies. By not focussing on specific technologies per se, but on technology as a whole, a more in-depth view for the rather disappointing implementation of technology in health care is given. Moreover, a broader inquiry of important values regarding technology, the experiences hereof, and the perspective of technology in future health care can be provided. Therefore, the aim of this study was threefold: (1) to explore the main values of care professionals in several health care settings and several levels of technology implementation, (2) to investigate the perceived influence of the technologies regarding these values, and (3) the accumulate views of care professionals with respect to (the use of technology in) the future.

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