Mindset Changes Among Health-Care Professionals and the Use of Technology

On What Nurses Encounter and Need in Telecare

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Contents

Abstract

Health-care technology is here to stay. We may therefore expect its use to cease to be a novelty and become part of the normal routine. However, telecare (a set of technologies used for care at a distance) is not yet part of the daily routine for nurses. They still have to do a lot of work to accommodate telecare, or they choose not to work with telecare at all. The extra work associated with telecare stems from the fact that telecare is often additional to regular care and involves all kinds of changes to regular work processes. In this chapter, telecare practices are looked at closely in order to find out what happens. By zooming in and looking at nursing telecare practices from different angles, we seek to answer two main questions: what kinds of (small-scale) changes in nursing care are brought about by technology and how can nurses deal with them? The conclusion is that changes brought about by technology can change the work processes, values, and care practices that nurses are used to. Nurses experience how telecare introduces new forms of nursing care, which, being new, require the formation and, when necessary, revision of professional opinions. Research into what the

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new practices involve will help nurses to form professional opinions and deal with the changes taking place within their profession.

Introduction

Health-care technology is here to stay. It will therefore cease to be a novelty and become part of the daily routine. At least that is what one would expect. But numerous small-scale projects, which remain small scale or come to a definite end, show that the reality does not always match the expectation. In this chapter, we consider how health-care professionals, especially nurses, are dealing with technology and whether they make its use part of the daily routine. Various projects which involved nursing care at a distance have been studied in the compilation of this chapter. The main technology used in the projects concerned is the webcam, although some other technologies are considered in this chapter as well. The center of attention for care professionals is of course the patient. However, in order to make a proper analysis of the effects on the (nursing) profession, the focus is on the professional. The patient is considered, but is not the main subject in this chapter.

The title of this chapter could be read as a little tendentious. Is a mind-set change to be forced on nurses in order to achieve the intended outcome? Does the title refer to the desired rise of technology use in care, in order to solve various problems such as the increasing demand for care as a result of an aging population and the associated potential for uncontrollable cost growth? That is one interpretation, but there are others. Such as wanting to support a profession that is increasingly confronted with technology. This chapter is underpinned by the latter motivation. It looks at the difficulties that professionals meet when working with technology. It shows how careful analysis can help them to deal with the changes that technology implies for their profession, by making change a professional response to technological innovation. This chapter builds on insights from nursing theories and science and technology studies, in order to answer the two main questions: what kinds of (small-scale) changes in nursing care are brought about by technology and how can nurses deal with them?

Day-to-Day Routines

When technology is introduced to the work process, it brings about various changes. Normal routines need to be overturned and fixed conditions need to be reconsidered. In this paragraph we consider these changes, describing them and showing what consequences they bring.

Various studies (Milligan et al. 2010; Pols 2012) have shown that technology profoundly changes the daily routines of care professionals. It is important to make the point that a change does not necessarily have to be large in order to be profound. A lot of the changes are small scale, yet significant. Indeed, it is the central message of this chapter that small, easily overlooked changes must be given proper attention if nurses are to use health-care technology in a professional way.

For nurses, the examples are numerous. Care at a distance implies not being present in the same room as the patient. That leads to the obvious changes to the nurse's daily routine, not only because the nurse cannot touch the patient but also because the nurse cannot use other senses while observing the patient and his surroundings. Normally, as in care in presence, whenever a nurse comes to a patient's house to check on his medication, the nurse will observe other changes as well.

> Mister Peter, as he is called by his regular nurses, is 88 years old. He takes three pills a day for various reasons. The morning one is the most important and that is also the one he tends to forget most of the time. A nurse visits him every morning to check his medication. They always chat a bit and sometimes there is even time for coffee. Last year Mr Peter suffered a mild stroke, from which he recovered almost completely. The home care organization started with a project on ICT and care. One of the applications they want to introduce with this project is a medication dispenser. This little machine warns patients to take their pills and warns the nurse if they don't. Mr Peter is asked to participate in the project. He used to work with ICT in his former job and is enthusiastic about giving it a go. Everything works well. In the last two months, Mister Peter has responded appropriately to the dispenser's warnings and has taken all his pills. He hasn't seen a nurse during this period. However, when evaluating the project after three months, the visiting nurse finds both Mister Peter and his home are dirty. When asked, he tells her he hasn't been feeling well for the last two weeks.

When, as in the case described, medication checks are replaced by a dispenser with an alarm, one of the patient's needs is met: he gets his pills on time. This change in available care has been described as dividing care into three parts: monitoring, physical care, and social-emotional care. Once care has been divided in that way, it is easy to separate the individual parts (Roberts and Mort 2009). This implies care in which all three parts are present, but their separation detracts from care as a whole, which means loss of synergy. An interesting feature of Mr Peter's story is that emerging needs are overlooked; needs that have not been expressed are not provided for. The change in need (for one of the three aspects of care) is something to be aware of when caring for frail older people. This situation can be prevented by making alternative house call arrangements, for example, once a week instead of once a day. That may necessitate administrative changes, since funding might be cancelled whenever a medication dispenser is a good alternative to daily visits by a nurse. In that case, it might be necessary to find a new basis for funding the suggested weekly visits, so that emerging needs can be observed.

Another example shows how telecare can lead to large-scale changes. It involves nurses who take care of patients with COPD. In their regular practice, these nurses supplement the care of the doctor by counselling patients during consultation hours

at the hospital. Depending on how the patient is doing and on whether the patient can cope with the disease, they meet once or twice a year.

> Mr Allali (52) was diagnosed with COPD two years ago. He finds it very difficult to get used to the idea that he has a chronic disease which forces him to change his lifestyle. Mr Allali used to work full time as an engineer in the metal industry. He used to exercise regularly and although he started smoking at the age of eleven, he completely gave up when he was 35. He takes his medication regularly, but finds it very difficult adjusting his lifestyle to his decreasing energy level. Nurse Tom and Mr Allali discuss this during his yearly visit to the hospital. Tom provides Mr Allali with the necessary information.

In the example, regular care seems sufficient for the patient's needs. COPD is a progressive disease, and when patients enter a more serious stage, their well-being can change quickly.

> Mr Allali has been in hospital for a week. He developed pneumonia, after not recognizing warning signs in time. His yearly appointment wasn't due for another five months. He isn't feeling well. His medication gets adjusted and he visits Tom again. Tom notices that Mr Allali finds it difficult to recognize small changes in his well-being that can predict severe illness such as pneumonia. He suggests that Mr Allali participates in a telecare project.

In this telecare project, the nurses have webcam contact with patients every week. Patients fill in an online questionnaire everyday, and nurses and patients discuss the answers once a week during the online consultation hour. It is notable how profoundly the telecare changes the nurses' normal routine. In this case, both large-scale and small-scale changes are apparent. The large-scale changes include obvious location changes – from hospital to a combination of hospital and home, with use of the webcam. Another large-scale change is in contact frequency: from once a year to every week. It seems almost inevitable that there will also be small-scale changes whenever the large-scale changes are so profound. It turned out that the nurses in this project found it difficult to accommodate the changes, because their routines changed completely. We will return to such changes in care at the end of the chapter.

One further point should be made regarding the large-scale changes referred to above. Telecare projects that are started with the best intentions – providing care at a distance with a view to improving both the quality and the efficiency of the care – frequently do not turn out as expected. In the case of Mr Allali, the telecare project led to an increase in nursing care by a factor of 12. After all, when Mr Allali joins the 3-month project, he "sees" Tom (on screen) 12 times, whereas with regular care he would have seen Tom no more than once in the same period of time. The reason for increasing the frequency of visits by telecare is that the improved monitoring can prevent sudden changes in Mr Allali's well-being. The nurse can advise him on lifestyle issues, changes in medication, or a GP's visit, which is much cheaper than hospital admittance. Such care at a distance raises funding issues, however. The extra costs associated with admitting Mr Allali to hospital only have to be met if admission actually proves necessary. If Mr Allali does not require hospital care, the costs of prevention make the care more expensive. This is an issue within the Dutch health-care system but will create problems anywhere where the costs of care and

prevention are not combined. And of course the situation is complicated by the fact that the party incurring extra costs (in this case the (home) care institution) and the party saving costs (in this case the hospital) are not the same. If such financial issues are not resolved, telecare projects are liable to be discontinued because of the rising costs. Such difficulties could be solved, of course, for example, by more intensive collaboration between health-care organizations, but that would necessitate an enormous change.

Fears and Experiences

Technology is part of who we are, not only as patients and nurses, but also as human beings. Computers and smartphones are part of our lives, both at work and within our social networks. Technical aids, such as coffee machines, cars, and elevators, help us throughout the day. Technical aids are not only around us, but sometimes even inside our bodies, as with ICDs and insulin pumps, for example. When we become patients who are fitted with or dependent on a technical device, it is not just the device that requires attention. Being sick means we also become people in need of care. Nursing is interrelated with technology in the same way. Technology supports nursing but implies the presence of devices that require attention, as part of the patient's body or as a supplier of medication, as with an infusion pump. Sandelowski (1999) states that there is a long-standing relationship between nurses and technology. She gives insight into the different aspects of this "symbiotic relationship," as she calls it. An interesting feature of Sandelowski's analysis is the idea that discomfort between nurses and technology is perpetual but so is the strength of the relationship. Sandelowski shows how, over time, nurses have tried to relate their identities to technology in two different ways. First, they have sought to embrace technology. However, that has not had exclusively desirable effects, since, for example, it also associates nurses with the servile identity of technology. Technology is designed to perform tasks which otherwise had to be performed by human beings, which has a servile aspect to it. The other path – opposing technology – did not work out well either, since it is too readily associated with undesirable gender stereotypes. If nurses state that technology is cold and they give warm care, they associate themselves with skills primarily ascribed to females, which gives the discussion a gender dimension (Sandelowski 2002).

It is worthwhile focusing a little more on one aspect of the relationship between nurses and technology: the idea that nurses fear technology. Their fears seem to relate to the dehumanization brought about by technology (Barnard and Sandelowski 2001). Machines cannot care the way people can. Barnard and Sandelowski argue that creating opposition between the fearful and the fear-free is unnecessary and that it is important to focus on how technology can become a part of care. They state that whether a machine leads to dehumanizing care depends on the user, because the user context defines the use of technology as nonhuman. It is a very elegant and indeed compelling idea, because it offers the space this article seeks to leave the use of technology to both end users. It is also difficult to implement. The debate regarding

fear of technology is still active. It is used by managers to explain why a technical innovation is not adopted quickly enough (or not at all). Policymakers, who believe that telecare will solve the problem of an aging population with an increasing demand for care, provide all kinds of funding that reward telecare projects. So it seems that the expectations regarding the success of telecare projects depend on "fear-free" nurses. It is therefore important to highlight the alternative viewpoint that nurses are not fearful but merely – at the very most – careful about handling the changes they meet.

Nurses who object to the use of technology are supported by Roberts and Mort (2009). They regard care as consisting of three distinct parts: monitoring, physical care, and social-emotional care, all three of which can be replaced by a machine or a nonprofessional caretaker. If just one of the parts is provided for in another way, for example, by using technology to monitor patients, you take out the core of care, because care is a whole, which is more than just the sum of its parts. That might be true, but it does not mean that the diminution of the whole is attributable to the use of technology. It has been shown that the opposite can be the case as well, with the introduction of telecare leading to more intense, frequent, and intimate care (Pols 2010). That is consistent with our example of Mr Allali, whose story illustrated implementation problems, but not because of the coldness of care in itself.

So opposing technology does not work. It might help to distinguish what plays a part in the complex changes observed, but it does not explain or remove the barriers to telecare. And even more important, opposition within the nursing profession does not help nurses to deal with the challenges they face. We have seen examples of nurses who were reluctant to embrace technology but also of nurses who were enthusiastic about it. The thing is to find out why nurses are reluctant, whether their reservations are justified and how they think those reservations may be addressed.

Values and Capabilities

Most of the debate regarding the use of technology in care outlined above relates to care values in nursing. Often the argument that counts for nurses is whether the suggested technical innovations will contribute to good care. What counts as good care can differ according to the situation or the patient. If we follow that idea, it could explain why telecare projects stay small scale and are not easily scaled up. Nurses frequently argue that telecare is simply not appropriate for every patient (which may be true in itself, but not helpful to the process of scaling up telecare). It would be helpful, however, if the primary driver were not the scaling up of telecare, but the provision of good care suited to future challenges. Nurses could then make appropriate care available to every patient, in line with their ideas of good care. Eccles (2010) argues for an ethical framework with more layers than the prevailing discourse among policymakers, who tend to be concerned mainly with cost reduction. That argument is consistent with the points we make above regarding the need for an

extensive layered analysis of nursing activity in telecare, in order to let nurses make adjustments that reflect the needs of their patients.

Another way of looking at values is to consider how nurses see themselves. What role do they have in care and how do they value that role? Telecare changes roles and responsibilities. Research has been conducted into changing roles in home care, as responsibility shifts between nurses and apparatus and nurses and informal care (Palm 2013). It is easy to imagine that whenever a nurse is less present because the monitoring of a patient is taken over by technology, the informal caretaker is even more present. It thus leads to changing roles in care. The role changes may well influence the way nurses value their own work or the relationship with the patient.

Role changes also give rise to debate regarding capabilities. The overall idea is that education is necessary in order to prepare nurses for the increasing amount of technology in their work (Barakat et al. 2013). This leads to new forms of education, in which technical knowledge and clinical knowledge are combined. There is much to recommend such a trend, as it suggests that new capabilities are necessary. There is also much to be said for another approach, where nurses are educated and trained the regular way, only in a new context. When nurses encounter technology during their training, they acquire skills and develop the ability to form opinions on innovation, using the skills of a critical nurse (van Hout et al. 2013).

Changes in Care

As we approach the end of this chapter, we reach the point that has received least attention. We have seen how technology influences different aspects of nursing practice. Are these aspects of nursing practice equal to care itself? If so, does it follow that, if nursing practice changes whenever technology is used, care will change in the same manner? Instead of starting a narrative discussion on what care is, we want to look at the more subtle, small-scale changes, in order to see whether the use of technology in nursing practice leads to changes in care. The project in which Mr Allali took part serves as a useful example in this context. We saw how, by the use of telecare, Mr Allali received care every week instead of once a year. The same happened to Mrs Borg.

> Mrs Borg has been a participant in the telecare project for a month now. She used to visit the nurse at the hospital twice a year. Mrs Borg has COPD and seems to be deteriorating more quickly than expected. Nurse Tom has been discussing lifestyle and medication according to the protocol. There appears to be no improvement, so he suggests that Mrs Borg joins the telecare project. Because of the webcam, which was set up in Mrs Borg's living room, Tom finds out a lot more about Mrs Borg's situation. During their weekly contacts, he sees numerous things that can influence Mrs Borg's physical situation, such as a parrot that stayed over and a smoking neighbour. Mrs Borg and Tom discussed pets and smoking before. Mrs Borg had never smoked and didn't own a pet, so Tom never paid any attention to it anymore and Mrs Borg didn't see any problem with temporary visits from cigarette-smoking neighbours and feathered friends. Tom now advises her to avoid both, because they do have an influence on her delicate pulmonary balance.

Tom got to understand a lot more about Mrs Borg's circumstances once he could literally see them. All through the project it made him think about the normal care provided during hospital consultation hours. Near the end of the project, he realized what puzzled him:

> Normally I discuss all different kinds of subjects based on a protocol and using a special card. These interventions are based on the idea that a patient benefits by a yearly visit when he is well informed about his disease. In the telecare project I do something completely different. The idea was to monitor patients more closely in order to prevent exacerbations (sudden worsening of the symptoms). These are two separate interventions. I should try to combine these two. The interesting question for us nurses is whether we can find interventions that fit an online consulting hour. It leads to new forms of nursing care, because we don't know if regular care can be changed into an online version just like that.

During the project, Tom gained insight into the (small-scale) changes in his profession and the (small-scale) changes in care brought about by the use of webcam-based technology. It is to be expected that such insights will develop alongside other technologies and other forms of care. It is not just about the obvious changes in work processes, it is about the nurses recognizing that care as they know it, care as enacted, will change.

Conclusion

At the beginning of this chapter, two questions were raised: what kinds of (small-scale) changes in nursing care are brought about by technology and how can nurses deal with them? Changes were seen in day-to-day routines (both large scale and small scale). Routines were turned upside down (for both patients and nurses), and new rhythms in care emerged when weekly consulting hours with the webcam were added to yearly visits to the hospital for patients with COPD. Fears and nurses' experiences changed, and it was shown that, although fears persisted, there were positive experiences as well. As a result, misguided opposition disappeared. Changing values were explored and related to good care and changing roles. Because good care involves patient-specific elements, it is necessary to give nurses space to adjust care and technology at the individual patient level. Finally, we considered the nature of care itself, exploring the changes within it. In one of the observed cases, a nurse concluded that new care originated from the current combination of regular care and telecare.

So technology brings about changes of different kinds: changes in work processes, daily routines, values, and care as we know it. So to our second question: how can nurses deal with such changes? In this chapter, we have argued that nurses should have the opportunity to experience the changes and subsequently tell us how they want to deal with them and the new care brought about by the use of technology. If nurses are sufficiently well equipped to observe changes, they will be sufficiently well equipped to intervene in care as they know it, in order to make that care fit the new situation. So let us, by research and evaluation, zoom in on as many new forms

of care and technology as possible, reveal what happens when those new forms of care and technology are used, and let nurses (and patients) make appropriate judgments.

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