COMPETENCE DEVELOPMENT AND THE IMPLEMENTATION OF TECHNOLOGY IN HEALTHCARE SERVICES

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Abstract

In the years to come the majority of the countries will face vast challenges making compliance between people in need of healthcare and resources available to meet those needs. Despite that telecare interventions are considered a solution to the current challenges, the use of technology is not very well developed and the potential is far from exploited. Furthermore, demands on healthcare services will transform working life and workplace practice and thus the occupational requirements related to providing those services. The aim of this study is to explore the need for competence development among managers and professionals in municipal healthcare services in Norway and Sweden when applying new technology. The research question is how managers and professionals can meet the demand for changed competence requirements when applying new technology and developing new ways of providing services.

This study forms part of an “Interreg Sweden-Norway”-project. Four group interviews were conducted, two in Norway and two in Sweden. Each group consisted of six to ten participants. In each country, there was one group consisting of managers within healthcare services, and one group of assistant nurses, nurses and physical and occupational therapists working close to the patients. Moreover, one interview was conducted with two participants from an IT-department. The interviews were transcribed and data were analysed using content analysis.

The different municipalities in Sweden and Norway have some experiences with telecare interventions as part of the healthcare service. The majority have tried out different kinds of technology in small scale-projects. However, the introduction of technology in healthcare services implies that professionals and managers need to develop their competence. Work processes also need to change in order to support the use of technology. Routines have been developed to a certain degree but there is still room for increasing knowledge and competence in order to enhance the implementation of technology. Both managers and professionals expressed uncertainty related to who owns the patient's data, consent, use of camera surveillance among other things.

Work-integrated learning is suggested, where academics from both informatics and health science support the practice of creating new work processes, and using technology in healthcare services. Professionals and managers consider knowledge and competence on what telecare solutions are available and how they work, as an important condition to succeed in implementing technology.

Keywords: Competence development, work-integrated learning, telehealth and telecare, technology, healthcare services.

1 INTRODUCTION

Norway and Sweden are, like most countries, facing vast challenges making compliance between people in need for healthcare and resources available to meet those needs [1,2,3,4,5,6]. Representatives from the authorities as well as public and private sector have pointed at telecare interventions as a solution to the current challenges [7,8]. Working life, workplace practice and the occupational requirements needed for providing healthcare services will be transformed due to an increasing demand, introduction of new technology and new ways of providing healthcare services [6,9]. Even if implementation of technology is on the agenda, the use of telecare is not very well developed and the potential is far from exploited [10,11]. Experiences from provisional use of telecare refer until now to a low success rate [12]. Although it is a growing interest for research in the field, it is still a need for more longitudinal studies and studies that focus on how implementation of technology is affected by contextual factors such as organisational issues, technological infrastructure and human actions [12,13,14]. Telecare is here understood as applications such as alarms and remote monitoring

of care needs using information and telecommunication technologies [15], and include sensors and reminders.

As implementation of telecare implies innovative modes of work, where changes in the organisation and human actions have to take place, learning and competence development is among the most important factors in this context. To facilitate learning in the workplace a partnership with universities can be suggested. An integration of work-based learning in cooperation with universities can contribute to learning and competence development in the workplace. Professionals in both organisations, the municipal care services and the universities, have domain knowledge and expertise that can contribute significantly to the co-production of knowledge and to facilitate the changing work processes when telecare are implemented [16]. Professionals from the workplace have more input about the intricacies of the actions and real work circumstances and rely heavily on their tacit knowledge, while the academics may hold dominance in content and theoretical knowledge within the related curriculum. Co-production in this context will draw together professionals in each domain, which hold their distinct sets of knowledge and expertise in a partnership with interactions. This way of co-production of knowledge and experience is called work-integrated learning (WIL), where the work tasks will be aligned with the academic curriculum. The intrinsic aim with WIL is thus to apply new knowledge in ways that perceptibly benefit the organisation, not only to demonstrate an understanding of new knowledge. The WIL will such transform the contextual factors to facilitate implementation of telecare. WIL is thus facilitating ongoing development across working life and contribute to innovations in the society [17].

This study represents the initial phase of a longitudinal study related to an “Interreg Sweden-Norway”-project. The purpose of the Interreg-project is to promote cooperation and exchange of knowledge and competence between representatives from municipalities, academia and private sector [18]. The project will also develope and introduce innovative products and services related to telecare and assistive living [18].

Focus of attention for this study is to investigate knowledge and competence as a contextual factor affecting the implementation of technology and new ways of providing healthcare services. The aim is to explore the needs for competence development among managers and professionals in municipal healthcare services in Norway and Sweden when applying new technology. The research question is how managers and professionals can meet the demand for changed competence requirements when applying new technology and developing new ways of providing services.

2 METHODOLOGY

The aim of the study implies that we wanted to elicit the participants’ experiences; we therefore chose a qualitative approach and group interviews as method of data collection. Group interviews may make the participants feel a group pressure to agree and have therefore limited them to present controversies [19]. On the other hand, it is a suitable method for revealing what the participants may agree upon and their common experiences but different viewpoints and experiences will also emerge. Conducting group interviews facilitate the mobilization and activation of the participants in way that is not possible in individual interviews [20]. Interactions in groups may contribute to new insight that we will not have access to through other methods. Given our research question on how managers and professionals can meet the demand for changed competence requirements the benefits of allowing the participants jointly to describe the challenges is considered to outweigh the disadvantages. Furthermore, it was important to study competence primarily as a common organisational need and less an individual need [20].

Four group interviews were conducted, two in Norway and two in Sweden. Each group consisted of six to ten participants. In each country, there was one group consisting of managers within healthcare services, and one group of assistant nurses, nurses and physical and occupational therapists working close to the patients and users. Moreover, one interview was conducted with two participants from an IT department. The local authorities selected informants already involved in the use of telecare or employees they wanted to involve at a later stage. They all signed an informed consent.

The interviews were transcribed and data were analysed using content analysis. Conventional content analysis describes a phenomenon by developing codes through multiple readings of the interviews. Such an inductive approach helps discover meaningful underlying patterns [21]. To reduce the risk of misinterpretations of the data due to the researchers’ pre-understanding, all researchers discussed in detail the findings and their systematisation during the analysing process [22].

The following themes crystallised from the content analysis: 1) learning about specific technology, manuals and procedures 2) development of specific thematic competence and 3) competence related to innovation and change.

3 RESULTS

The results show that existing knowledge and competence within healthcare settings are challenged by changing needs as well as the introduction of telecare and other technologies. The interviews reveal that the majority of the municipalities had tried out different kinds of technology in small scale projects. At the same time, there were significant variations when it came to actual experience with use of technology in working situations.

Some of the municipalities became aware of the need for change of work processes in order to support use of technology. Managers told about a certain degree of routine development due to new ways of providing services, but they still needed to increase knowledge and competence to enhance the implementation of technology. Both managers and professionals expressed uncertainty related to who owns the patient's data, consent and use of camera surveillance among other things.

3.1 Learning about specific technology, manuals and procedures

All professionals who work in departments where technology is introduced have received specific training on how to use a given technology. The professionals' perceived outcome of specific training varied, but many of them referred to the way training was organised as a challenge. It was a widespread experience that one or two, more or less random chosen colleagues received training and were given the responsibility for sharing knowledge with the rest of the professionals. Professionals required more quality assurance regarding the internal training related to specific technologies. Thus, the individual learning processes was characterised by trial and error.

As a response to the need for training, some of the managers explained that they organised visits to departments that already had experience with technology in addition to the specific training. The same managers added that their department had established routines to dedicate 1-2 days a year focusing on new technology and related training needs. Managers from another municipality referred to positive experiences with videorecording instructions and manuals for use of specific technology and other work related procedures. According to the managers, professionals were satisfied with the opportunity to use video instructions. Professionals stated that the video instructions made it possible to watch the video repeatedly according to their individual needs. Obviously, there are significant differences in learning capabilities among professionals. Some managers know of professionals who have problems reading traditional manuals and instructions. Language skills and age can represent additional challenges.

Some of the managers and professionals had tried eLearning as a tool for competence development. Both managers and professionals argued that eLearning demand too much initiative coming from each individual employee. They agree that the best learning effect is achieved when training is organised according to issues the professionals themselves recognise as particularly challenging. Apparently, they demand work-integrated learning. It is a major concern that managers and professionals who feel insecure about using technology would refuse to apply technology in their everyday working life.

3.2 Development of specific thematic competence

Traditionally, healthcare services have had a major focus on treatment, relief and palliation and preventing illness and disease among people how are at risk. Both managers and professionals were concerned that the traditional competence no longer is sufficient. There is also a need to provide the right answers when patients, users or relatives ask questions related to telecare and similar technologies. According to the participants, it is likely to believe that questions and demands related to the use of technology in healthcare services will increase – as is the market that deveopes technology meant for healthcare.

Based on their working life experiences the participants talked about a need for developing basic competence related to informatics. In order to implement technology to healthcare services they need to gain more understanding about the functionality of the technology and how the technology communicates with different systems already in place. The introduction of technology involves a need

for cooperation between different departments in the municipalities, e.g. between the department of healthcare service and the IT department. Furthermore, there is a lack of common language related to technology, a prerequisite for cooperation. Developing competence related to informatics can therefore facilitate the introduction of technology into healthcare services. Provided that there are arenas for cooperation, managers and professionals have expectations that technology may contribute to improved quality of the services. Managers and professionals emphasise technology as a mean to improve the overall quality of healthcare services.

When discussing the overall goals for introducing telecare both managers and professionals stated that the users' increased experience of handling everyday life and activities are the most important. In order to enable the users' capability to handle their lives, managers and professionals needed more focus on their own competence related to health promotion and helping people mastering their lives. The managers argued that a more person centered and user oriented working life including a more systematic awareness of technology, may delay the need for more traditional healthcare services as the users are to a large extent supported to help themselves.

The introduction of technology in healthcare services also creates challenges which relate to existing laws and regulations. All participants were concerned about how to handle the requirements for protection of personal information and had a need for developing basic competence on this field. At the same time, they emphasised the possibility to learn from employees who have law and regulation as their field of work. They did not need competence on law and regulations in general, but they needed to develop their competence on the laws and regulations that affect their specific workplace and working life.

3.3 Competence related to innovation and change

Healthcare service is in need of change. Thus, the demand on competence related to innovation- and changing processes are growing. Managers and professionals in healthcare services are used to changes, but the changes related to providing services for the future demand new forms of innovation competence. The managers in particular need this kind of competence. To gain competence in a field that have little traditions in healthcare it is necessary to cooperate with people who holds that competence. This type of cooperation may facilitate work-integrated learning and it can make it easier to integrate knowledge about innovation and the providing of healthcare services.

Even if the importance of innovation competence were a theme in all the interviews, both managers and professionals agreed upon that it was unrealistic to get every employee set for a competence development related to innovation. They also argued that it would not be suitable for everyone to gain the same level of innovation competence, due to time dedicated to competence development and knowledge as well as individual skills and interests. The time devoted to competence development and knowledge acquisition, in addition to individual skills and interests, impedes all employees having the same innovation skills. Interdisciplinary teams were suggested as a solution. Managers as well as professionals described the idea of an interdisciplinary team that could function as a gatekeeper. As such, they could more easily identify user needs that may benefit from telecare rather than traditional healthcare services. As an example of a fruitful team, one of the informants presented an idea related to a low-threshold service were a librarian, a teacher and some pupils were cooperating to offer IT-support to old persons in the community.

Both managers and professionals emphasised access to support as a crucial factor. They also discussed the importance of cooperation about development of competence in general. In order to develop the necessary occupational requirements to provide future health services, cooperation on knowledge of skills between employees from different professions was considered a positive contribution. However, many informants also argued for of more profession specific training. More profession specific competence development could make it easier to lay the groundwork for lifelong learning.

4 REFLEXIONS

Both lifelong learning and work-integrated learning (WIL) are presented as effective tools for equipping graduates with the occupational requirements needed in working life. Most healthcare professionals have attended education programmes that contain a combination of practice and theory. An example is the EU-directive for professional qualifications that regulates nursing education to contain minimum 50% practice [23]. A demand for 50 % time in practise in different workplaces could represent a good

basis for WIL. However, some of the learning traditions in healthcare professions can represent a challenge to WIL. Traditionally, many healthcare professionals have had knowledge and competence transferred from expert to novice. Expert-novice learning often focuses on specific procedures and manuals for different interventions like treatment of wounds or the use of safety alarms. Competence development of more abstract and less profession-specific competence is less common within an expert-novice learning tradition. A working life characterised by new technology and new ways of providing healthcare services requires a change in learning traditions towards more competence about telecare on a more abstract level, not only training in use of specific telecare devices, knowledge that traditionally belongs to other professional disciplines such as law and regulation, informatics and the ability to analyse the entirety of userneeds [24].

The results of this study indicate that there is little room for WIL in healthcare services due to organisational as well as individual factors. Many professionals express their need for specific training. However, they hardly take any initiative for more abstract competence development. On the organisational level, there seems to be a lack of systematic focus on lifelong learning at the workplace. In the long-run, there is a need for change in the healthcare educating programmes at lower level like bachelor's degree and other skilled workers. It is also necessary to integrate competence development beyond what is professional-specific in a lifelong learning perspective [24].

Enabling learning at the workplace is a component of professional identity formation [25]. Hence, it is imperative to understand how informal learning and professional development can be integrated in professional work [26]. Researchers from academia, from both informatics and health science, together with professionals at the workplace need to honour knowledge from both academia and workplace. In order to make the cooperation truly participatory, researchers and professionals have to share both power and control. The WIL concept should also be based on negotiation in order to build consensus and trust between the involved parts.

Public health research has been criticised for focusing too much on understanding problems and not enough on solving problems [27]. Hence, in this WIL concept critical perspectives can take place, and by observation, discussion and reflection, actions can be tested to bring about competence development and change of work processes. Accordingly, WIL intertwine individual, collaborative and organisational learning [28]. Reflections have the potential to support transitions between these levels of learning, and also facilitate learning among professionals and managers as reflection is a core mechanism of informal learning at work. WIL is such supporting healthcare professionals and academics in articulating and sharing knowledge, experiences and performance to be able to make necessary changes.

Previous research has indicated that technology literacy among healthcare professionals is mixed [29]. The study also shows mixed technology literacy even if all of the professionals got the same training. The differences are mostly based on previous experience and differences in learning capabilities. Knowledgeable colleagues are one of the most important sources of knowledge for the professionals at the workplace, and this could also be verified for example by Beham et al [30]. The more knowledgeable professionals could become "change champions" and can thus lead the change and the appropriate use of new technologies within the workplace. In the same way academicians can work as "change champions" and support the healthcare professionals and managers with competence in changing processes and implementation and use of innovative technologies. Cooperation for increase of knowledge and competence is of vast importance, and if a few are knowledgeable and competent they will contribute to the whole workplace. The study revealed that there is need for a wider knowledge base within healthcare, however the professionals need to be trained to stretch their knowledge base to include also technology competence and how implementation of technology has an impact on organising of work processes. In order to organise for knowledge and competence sharing, different communities can be created within the healthcare context, as resource groups or interdisciplinary groups, as suggested by the participants in this study. As stated by Mørk et al [31] any innovation can fail to be translated into practices because they cut across established knowledge bases.

5 CONCLUSIONS

The results show that it is not sufficient to have access to technology alone, but competence, organisation, information and communication can be crucial for an effective innovation and change process. To get started using telecare is more demanding than assumed, even though the technologies and resources are developed and accessable.

Professionals and managers consider knowledge and competence on what telecare solutions are available and how they work as an important condition to succeed in implementing technology. Work-integrated learning is suggested, where academics from both informatics and health science support the practice of creating new work processes, and using technology in healthcare services.

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