



User involvement in the implementation of welfare technology in home care services: The experience of health professionals—A qualitative study

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Abstract

Aims and objectives: The aim of this study is to learn more about factors that promote or inhibit user involvement among health professionals when implementing welfare technology in home care services.

Background: It is a health policy goal to increase the use of welfare technology in order to address some of the challenges that healthcare services are facing. Health professionals' involvement is important for the successful implementation of welfare technology in home care services.

Design: The study has an explorative and descriptive longitudinal design based on a qualitative approach. Five focus group interviews were conducted with 16 nurses and assistant nurses from three different municipalities over a period of 2 years. The data were analysed using reflexive thematic analysis. The COREQ checklist was used.

Results: The analysis led to five main themes: competence a critical component, information and information lines, new ways of working, choice of welfare technology and change in patient services. From health professionals' perspective, there appeared to be a lack of preparedness for the change in the implementation of welfare technology entailed for home care services. The respondents experienced limited facilitation and opportunities for user involvement.

Conclusion: Health professionals want to be more involved but emphasised that competence, information and collaborative arenas are necessary factors if involvement in the process is to be increased. Competence affected some of the respondents' attitudes and willingness to use the technology. The respondents also experienced that the managements' focus on facilitation and interest in user involvement in addition to infrastructures that functioned in various ways had an impact on user involvement.

Relevance to clinical practice: The knowledge gained from this study about factors that promote or inhibit user involvement among health professionals could contribute to better preparedness for further implementation of welfare technology in the field of home care.

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KEYWORDS

aged, e-health, home health care, innovation, nurse–patient relations, nursing, qualitative research, technology, telehealth

1 | INTRODUCTION

In Western societies, there is pressure on and growing demand for home care services due to the increasing number of older people, economic pressure and changes in health policies (Eurostat, 2019; Genet et al., 2011). It is a health policy goal to increase the use of technology that enables people to live longer at home (World Health Organization Regional Office for Europe, 2008). In Europe, 20% of citizens were over 65 years old in 2018, and this proportion is expected to reach a peak of around 29% in 2040 (Eurostat, 2019).

Statistics from Norway show that 31% of residents aged 80 years or older used home care services in 2018, and this percentage is expected to increase (Statistics Norway, 2019).

In the healthcare context, technological solutions in Scandinavian countries fall under the umbrella term welfare technology (Kamp, Obstfelder, & Andersson, 2019). Kamp et al. (2019) point out that the term is broad and loosely defined, covering a wide array of technologies. In international literature on healthcare technology, the term telecare is commonly used, but consensus on definitions is limited (Cook et al., 2016; Greenhalgh et al., 2013). Other commonly used terms are telehealth, telemedicine, assistive living technology and e-health, but the dividing lines between them seem to be blurred (Barrett, Thorpe, & Goodwin, 2014; Solli, Hvalvik, & Hellesø, 2012). In this study, we use the term welfare technology, understood as technological assistance used by both patients and next of kin to contribute to safety, security, wellness, mobility, social and cultural contact and participation, and treatment and care. Such technology can also provide useful information, overviews and logistical solutions in home care services for health professionals.

Providing opportunities for user involvement in the workplace is important for empowerment and a principle that promotes democratisation and job satisfaction among health professionals (Spreitzer, 2008). Health professionals' involvement, knowledge and ownership have been shown to be important success factors in innovation processes in the workplace (Framke et al., 2019). The context of home care is important for health professionals' experience in this study. Studies of combining user involvement, welfare technology and home care seem scarce. The focus of this study is on exploring different perspectives on user involvement among health professionals in the implementation of welfare technology in home care services.

1.1 | Background

1.1.1 | Organisation of home care services

Home care services appear to differ between and within countries. In most countries, they include rehabilitative, therapeutic and

What does this paper contribute to the wider global clinical community?

- Insight into health professionals' experiences of user involvement when implementing welfare technology in home care services.
- Identification of factors that promote or inhibit user involvement among health professionals when implementing welfare technology in home care services.
- Highlights user involvement as a prerequisite for successful implementation of welfare technology in home care services.

assistive home care, in addition to nursing (Genet et al., 2011). In Norway, municipalities are responsible for providing primary health and social care, including home care. Home care is organised according to geographical areas, and it is an integrated part of the healthcare service. All Norwegians with health-related needs have a legal right to receive public home care services, in the municipality where they reside regardless of their age, gender, and socioeconomic status (Ministry of Health and Care Services, 2011). This approach to health care is called the Scandinavian or Nordic Model (Kemp & Hvid, 2012). The Nordic healthcare model is based on solidarity and focuses on both universal civil rights and protection of minorities. The welfare state has the main responsibility for providing healthcare services to the entire population living in the Nordic countries. The municipalities primarily finance public home care services through taxes, and this care is publicly owned and operated (Magnussen, Vranbæk, & Saltman, 2009).

There are variations in the numbers of registered nurses (RNs), nursing assistants (NAs) and nursing aides employed in each municipality home care depending on its size, population, needs, finances and how municipalities organise their healthcare services (Holm, Mathisen, Sæterstrand, & Brinchmann, 2017). The high level of variation among municipalities makes it difficult to get exact figures about the number of employees who work in home care.

However, in Norway, and globally, there is a shortage of RNs. This may lead to a high workload and can affect the quality of the services (Rafferty, 2018; Statistics Norway, 2019; WHO, 2006).

1.1.2 | Implementation of welfare technology

Several municipalities in Western societies are carrying out projects of welfare technology in home care services (Barland & Lovett, 2014).

There is an expectation that increased use of welfare technology will have a positive effect to meet the changing situation resulting from the growing number of patients with complex needs, shorter hospital stays, the decreasing workforce of health professionals and a demanding financial situation, all of which are challenging healthcare services in the municipalities (Gaikwad & Warren, 2009; Kruse, Soma, Pulluri, Nemali, & Brooks, 2017). Welfare technology is envisioned as leading to new, smarter ways for health professionals to work, promising patients higher levels of empowerment, safety and quality (Kamp et al., 2019). For example, electronic patient record systems (EPRs) on tablets assist health professionals during their workday and help them find and provide information, administer the correct treatment, as well as document health care and make appropriate and effective individual plans. It is also expected to create efficient workflow and support decision-making (Rouleau, Gagnon, & Côté, 2015). Other technologies, for instance digital door locks, may provide health professionals easy access to the patients' home (Majumder et al., 2017). Digital safety alarms, sensors and medical robots primarily contribute to patients' safety, independence, quality of life and well-being in their own homes (Dugstad, Eide, Nilsen, & Eide, 2019; Holthe, Halvorsrud, Karterud, Hoel, & Lund, 2018; Stokke, 2017). Different welfare technologies have implications for RNs' and NAs' daily work in home care, and several factors influence patients' and health professionals' experiences and willingness to use these technologies (Barrett et al., 2014; Brewster, Mountain, Wessels, Kelly, & Hawley, 2014; Saborowski & Kollak, 2015).

To provide high-quality nursing competence is required, both for the technology itself and the new ways of working (Andersson, Lindholm, Pettersson, & Jonasson, 2017). Research shows that there are barriers to overcome when implementing welfare technology, including organisational, cultural, technological and ethical resistance (Nilsen, Dugstad, Eide, Gullslett, & Eide, 2016). Resistance arises from a variety of perceived threats, such as threats to stability, predictability and knowledge. Moreover, resistance develops from threats to health professionals' role and group identity, as well as threats to basic healthcare values and patient safety (Nilsen et al., 2016). The study by Brewster et al. (2014) indicates that competence and information flow influence the process of implementing welfare technology. Gjestsen, Wiig, and Testad (2017) identified management, workforce, motivation for change and maturity as important success factors in primary care when preparing the implementation of welfare technology. It has been pointed out that trust and partnership are prerequisites for the acceptance of welfare technology (Berge, 2018). In most of the studies of welfare technology, the focus is on the technology and its implementation, and not on how the health professionals are involved in the process, as is the case in this study.

1.1.3 | User involvement among health professionals

In this study, user involvement in the healthcare services is understood to refer to how those who are affected by a decision: patients,

next of kin, health professionals or other users, can influence the decision-making processes and the design of home care services. Both "user" and "involvement" are terms that can be interpreted in several ways, and there are a number of suggestions for how user involvement can be encouraged, facilitated and increased (Dent & Pahor, 2015; Kalsoft, Nielsen, Salkeld, & Dowie, 2014). Focusing on user involvement can be seen as a step towards general democratisation and right to cooperate on the development of healthcare services (Barnes & Cotterell, 2012). The idea is that user involvement will contribute to better health services for both the individuals and communities and will result in greater respect for personal autonomy (Dent & Pahor, 2015).

Several studies have highlighted the need for user involvement in general in health care, although not relating to welfare technology. In addition, most studies focus on patients as users, while only a few focus on health professionals (Andreassen, 2017; Dent & Pahor, 2015). Decision-making skills, motivation and quality of health care were mentioned in a study by Omeni, Barnes, MacDonald, Crawford, and Rose (2014) as benefits of user involvement in health care. Cresswell's (Cresswell et al., 2013) article pointed out the importance of managers identifying needs together with everyone involved, including health professionals, to generate new insight and prepare the professions for changes. De Veer, Fleuren, Bekkema, and Francke (2011) offer insight into how a group of nurses perceived new technologies. They found that cooperative approaches may be the best way of achieving positive, sustainable implementation. Another study shows that improvement clearly depends on change, but that changes always generate new challenges (Dixon-Woods, Amalberti, Goodman, Bergman, & Glasziou, 2011). However, empirical studies of how user involvement best can be facilitated in the changing of home care services are scarce.

Health professionals' involvement may be important to the professional environment and quality of services, and the success of the implementation process. The impact of the changes on health professionals and the processes of facilitating implementation and user involvement has rarely been studied. Most of the studies focusing on user involvement in health service development focus on the patient as the user, and not on health professionals, and they are not linked to the use of welfare technology. There is thus a need to explore health professionals' experience of user involvement and welfare technology in the context of home care services.

1.2 | Aim of the study

This study will address and reflect on changes and preparedness for the process of implementation of welfare technology in home care services, and health professionals' experience of user involvement.

The aim is to learn more about factors that promote or inhibit user involvement among health professionals when implementing welfare technology in home care services.

2 | METHOD

To explore health professionals' experience, we decided to carry out a qualitative study with an explorative and descriptive longitudinal design, using focus group interviews. The design entails an opportunity to illuminate experiences and knowledge as part of a process of sharing and discussing experiences in a focus group interview and make sense of them. We gained insight and an understanding of the respondents' experiences, and through this, we could describe this study's complex context (Bowling, 2014; Morgan, 1997). For the analyses, we use reflexive thematic analysis as described by Braun, Clarke, Hayfield, and Terry (2019).

The COREQ checklist for reporting qualitative studies was used (Supplementary File 1).

This study is a part of a PhD project on welfare technology and user involvement in home healthcare services. It is the first of four sub-studies in the project.

2.1 | Design

In order to explore health professionals' experiences, attitudes and reflections on what inhibits and what promotes user involvement in implementing welfare technology in home care services, we used a phenomenological-hermeneutical approach to both grasp the essence of the respondents' everyday experiences and interpret these experiences from an understanding of user involvement (Bowling, 2014). Hence, we used focus group interviews with health professionals working in the home healthcare sector. In order to gain knowledge and an understanding of the everyday context and complexity of home health services, we searched for experiences of professionals with first-hand knowledge from working in the field. In focus groups, where people with different experiences meet and discuss the topics of the study, there is an opportunity to get complex perspectives through the participants' discussion and exchange of viewpoints (Morgan, 1997). It was for this reason that we wanted focus group respondents with different backgrounds, some with a great deal of experience and interest in welfare technology and others with a limited interest in it. We also wanted respondents from different municipalities that had different approaches to and experiences from the implementation process. The field of welfare technology is in rapid development, and there is reason to believe that this also impacts processes of involvement and health professionals' experiences. We wanted to conduct additional focus group interviews again after some time for these reasons. Accordingly, the design also has a longitudinal approach over a time period of 2 years.

2.2 | Data collection

During the planning stages for data collection, a joint information meeting was held for the management of the relevant municipalities. They were informed about the study's goals and research

design. A written information consent form was also e-mailed to them after the meeting. The management of the home care services in three municipalities accepted the invitation to participate in the study, and they handed out invitations to the RNs and NAs in their department.

2.2.1 | Setting

The respondents were registered RNs' and NAs' working in home care services in three municipalities in Eastern Norway from 2017–2019. The smallest municipality had approximately 11,000 inhabitants, while the largest had approximately 18,000 inhabitants. In terms of land area, the size of the municipalities varied between 176 and 961 km² and they included both urban and rural areas.

Like all municipalities in Norway, the three municipalities were obliged to implement and use welfare technology in their day-to-day work in home care services. Although the implementation was started, the municipalities were at different stages in the process. In all three municipalities, health professionals had access to EPRs on digital tablets, and patients used medical robots and safety alarms. Most of the safety alarms were digital, having GPS tracking and the possibility of connecting to sensors. However, there were still some analogue alarms in use. Digital door locks were about to be installed in all three municipalities during the study period.

2.2.2 | Sampling and recruitment

A purposive sampling procedure was chosen due to the aim of the study. The inclusion criteria were that RNs' or NAs' had worked in home care services for at least 6 months, in at least at 50% position. Representation for both genders was requested along with a variety of ages and work experience. In order to be included in the follow-up interviews, respondents must have had participated in one of the three initial interviews. One RN and one NA from each municipality, a total of six, were invited to attend the two follow-up interviews. It was the management of each of the three municipalities who recruited the respondents for all five interviews and gave out the consent forms and collected the signed forms. In all the interviews, the first author agreed with the managements about time and place for the interviews. The management informed the respondents.

2.2.3 | Respondents

A total of 16 respondents, 9 RNs' and 7 NAs' agreed to participate. There were 3 men and 13 women, and their age ranged from 33–62 years, with a median age of 45. Their work experience in their municipalities ranged from 8 months to 13 years, with a median of 10 years.

2.2.4 | Focus group interviews

Focus groups are particularly suitable when the objective is to learn more about people's experiences, attitudes and views in the environment where they usually interact (Morgan, 1997). The respondents were invited to discuss and comment on each other's opinions and experiences (Morgan, 1997). We wanted to shed light on a variety of experiences, views and attitudes to welfare technology.

A moderator (first author) and a secretary (last author) conducted the focus group interviews, as recommended by Morgan (1997). They held the same position during all five interviews. The moderator led the interviews, while the secretary took notes and regularly summed up to validate the discussions. The moderator was attentive to the respondents' discussions and stories and sensitive to surprises and/or topics and opinions that might challenge preconceptions. The first author and secretary met the respondents for the first time at the first three interviews. Both the moderator and the secretary are RNs' and have previous experience of focus group interviews and qualitative methods. The moderator is a PhD student, while the secretary is an experienced researcher.

2.2.5 | Conducting the focus group interviews

Five focus group interviews were held. Three interviews were conducted in spring 2017, at the respondents' workplace. One follow-up interview in autumn 2017 and one in spring 2019 were conducted at the first authors' workplace.

A flexible interview guide was used for the first three interviews, focusing on experiences of being introduced to welfare technology in home care services. The interview guide was based on the research questions and focused on what characterises an effective process for implementing welfare technology, and what barriers and facilitators were experienced in the implementation process and daily use of existing welfare technology. For the follow-up interviews, the interview guide was slightly modified to focus more on how the implementation process in the municipality developed, and how this influenced user involvement. The purpose of the fourth and fifth interviews was to examine changes in the processes of implementing welfare technology, and whether or how user involvement was affected. In addition, we wanted to obtain a more saturated description from respondents of user involvement than had emerged in the first three interviews. The interviews lasted for 90 min on average, and they were recorded digitally and transcribed verbatim.

2.3 | Data analyses

The data were analysed using reflexive thematic analysis, as described by Braun et al. (2019). In reflexive thematic analyses, the themes are described as meaning-based patterns in the data that are evident in either explicit or conceptual ways. The analysis process

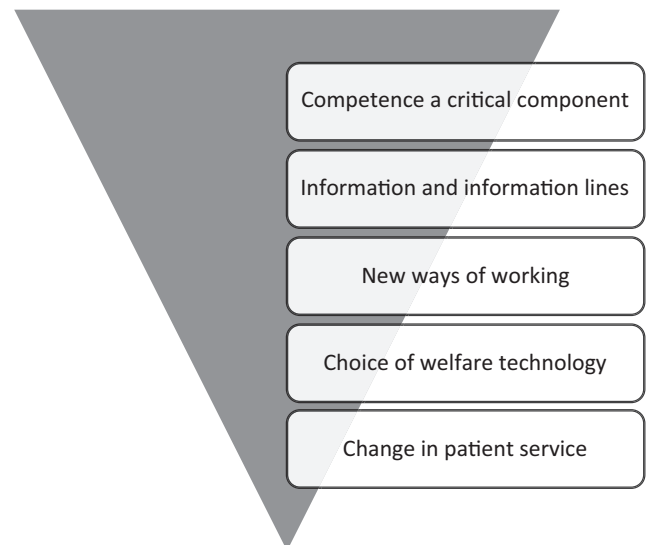


FIGURE 1 Main themes. Visualisation of the main themes relating to user involvement in the implementation of welfare technology in home care services

was done manually, and all the researchers played an active role in the process.

As recommended by Braun et al. (2019, pp. 852–857), the six phases in the data analyses were followed, starting with phase one, *familiarisation* with the data material. Both during and after the interviews, the secretary took notes about impressions and possible interpretations. After transcription, all the interviews were read and reread by all the authors. The data material was discussed, and intuitive codes elaborated. In phase two, we carried out more detailed and systematic work on the data to *generate codes*. Each transcript was explored using open thematic coding. In this process, we extracted the meaning content from the data, which were organised around similar codes and meanings. In phase three, *themes were constructed*, built and moulded across the data, based on the research questions and the researchers' interpretations. An overview of tentative themes and sub-themes was created based on the patterns and statements in the text. In this phase, some statements were categorised under more than one theme, as they were still perceived as overlapping and difficult to place. After the initial coding, sorting and thematising, we agreed on the codes and themes that were necessary to proceed to the next analytical level. *Themes were revised* in phase four, and we reflected on and discussed themes back and forth. All the themes were discussed and revised to avoid overlaps and to gain a clear sense of how each of the themes was related to the others, and they were checked across the whole data set. In phase five, the themes were *defined and given more clarified names* to convey the essence of the empirical data. (Figure 1). The analytical work was wrapped up in the sixth phase, *producing this article*, which involved checking how well the themes worked, together and individually.

Tables 1 and 2 visualise how we have arrived at selected themes through coding and analysis.

TABLE 1 Examples from the coding procedure

Quotes about health professionals' involvement	Code	Group	Initial themes
"I have experienced poor training. I suddenly stood there and an alarm went off and the medicine roll had jammed, and I did not know what to do."(5)	A feeling of not knowing what to do	Lack of training	Insecurity
"We have long distances. I normally have to go back to the office to pick up a key. Then I realised that the patient had gotten a digital door lock. So I spent 5 min instead of 25 min getting to the patient." (4)	Technology saved time	Routine change	Change of work
"The last time I was interviewed I was very negative about the use of GPS, but now I am very positive. So I turned around. It's about learning more about how strict the law is in relation to this." (4)	Knowledge changed attitudes	Factors influence attitudes	Attitudes

In the follow-up interviews, the respondents were invited to check the analysis of the previous interviews. We presented the results from the previous interviews at the start of both follow-up interviews. We asked if the respondents had any comments, objections or additions to the results of our preliminary analysis. They confirmed our results.

The results from all five interviews were also presented to the advisory group of the PhD project, of which this study is a part. Participants in this group were recruited from two Pensioners Associations, and one was recruited from a next of kin group from the National Association for Public Health. The group consists of one person receiving home care, two next of kin, of whom one was also a NA. The group's role was to be a discussion partner during the interpretation of the findings. The advisory group introduced new perspectives from their point of view, for instance how to interpret the quotes from the interviews.

2.4 | Research ethics

The study complies with the Helsinki Declaration's principles for medical research (The World Medical Association, 2017). All

respondents in the study were given oral and written information about the project and signed written informed consent. They were informed that they could withdraw from the project if and whenever they wished, but that the data already in the analysis could not be shredded. Furthermore, they were informed that all data are unidentified and that their confidentiality was safeguarded. They were informed that the data were stored in accordance with applicable rules and guidelines for storing research material.

The study has been reported and approved by the National Centre for Research Data.

3 | RESULTS

In the interviews, the respondents showed great commitment to discussing user involvement and the implementation of welfare technology in home care services. All of them were active in the focus groups and engaged with the use of welfare technology. However, they had a somewhat different understanding of the concept of user involvement, and there were different user experiences of technologies.

TABLE 2 Results of the analysis

Initial themes	Sub-themes	Main themes
1: Changed way of working	New ways of working	New ways of working
2: Getting information	Information lines	Information and information lines
3: Network challenges	Infrastructural challenges	Information and information lines
4: Time and areas	Facilitating competence enhancement	Competence
5: Insecurity	Facilitating competence enhancement	Competence
6: Resources and economy	Deciding which technology to choose	Choice of welfare technology
7: Limited information	Need for information	Information and information lines
8: Competence is needed	Need for competence	Competence
9: Attitudes	Need for competence	Competence
10: Resistance to change	Need for competence	Competence
11: Limited ownership	Involvement and responsibility	Competence
12: Concern for patients	Professionalism and concern for patients	Change in patient service

In this study, we found that health professionals experienced that, when welfare technology was implemented in home care services, there were several factors that inhibited user involvement and a few that promoted it. One overall result from the perspective of the health professionals appeared to be an experience of unpreparedness for the change that would follow the implementation of welfare technology in home care services at all levels. The health professionals also experienced limited opportunities for user involvement.

In this section, we have added the number of the health professional (HP) respondent in front of the quotation, and the interview number they are associated with, in parentheses.

3.1 | Competence a critical component

Implementation of welfare technology requires competence in the sense of being prepared for change, seeing opportunities and using welfare technology as intended. Most of the respondents stated that competence was the most important prerequisite for user involvement. Competence was associated with confidence and concern about the quality of home care, like it appeared in interview three.

HP 17: It is necessary to have good information and competence, first and foremost about the products to be used.

HP 20 followed this up: We must learn enough about it (welfare technology), have confidence about it, talk positively about it... Then it'll be easier to speak to the next of kin and patients about it.

Several respondents expressed that they did not have enough competence in relation to welfare technology, and few opportunities to acquire this. There were differences in competence levels even within the same municipality, as appeared in interview one:

HP 2: There are some digital safety alarms in use

HP 6: Yes, but they've probably been bought on the private market because I don't think we have any

HP 4: What do you mean by digital? What do they look like?

The respondents stated that their manager only to a small extent, provided competence-enhancement measures enabling them to learn about welfare technology. Some managers expected the health professionals to familiarise themselves with this new competence during their free time, which was experienced as challenging. There were variations between the three municipalities, but the tendencies revealed a convincing pattern of not involving health professionals in competence-enhancement measures.

By the time of the last follow-up interview, competence-enhancement programmes had become more common and were offered within the framework of ordinary working hours. After some

rounds in which different technology was tried out, some managers recognised the importance of competence in relation to involvement and managing the technology.

Nevertheless, there were still some problems with organising the competence-enhancement measures so that they reached all health professionals since most of them worked shifts.

The respondents realised that not all of them could decide in the implementation of the technology and supported the idea of using resource groups in such processes. However, they emphasised the importance of having a basic understanding and knowledge of the different technologies, in addition to playing an active role in the implementation process and dialogue with the patients, next of kin and their colleagues. They were concerned that limited competence might have negative consequences for patient care.

HP 5 (Interview five): We have experienced that patients have received incorrect information and training because of limited competence among health professionals.

On the other hand, some of the respondents stated that having increased competence inspired them to use technology. They were more positive, eager, and more actively involved and became more aware of patients' opportunities and needs. The quotation below is an example of how patients might be at risk if the management does not provide competence-enhancement measures.

HP 2 (Interview four): We had a research and development nurse who came from the management staff who taught us how to use electronic patient records on the digital tablets. That helped us a lot because we can plan our workdays better. Previously, many forgot to give the medication because they did not know where to find the information.

The fact that the technology was often introduced before adequate training was given may have caused operational problems, as well as resistance to the use of the technology. Health professionals felt uncomfortable in front of the patients and next of kin because they were not familiar with the functionality of the welfare technology. The consequence was a feeling of inadequacy, and some chose not to use welfare technology.

HP 6 (Interview five): I suddenly stood there, and an alarm went off, and the medicine roll had jammed in the medicine robot, I did not know what to do.

We found that health professionals' attitudes to taking initiatives or responsibility for improving their competence varied. Some of the respondents wanted to see more involvement and responsibility from their colleagues. While most of the respondents wanted to acquire more competence, a few were sceptical and did not want to use the technology or learn more about it than they needed to.

HP 7 (Interview one): I'm not very good and uncertain about how to use the technology. I will soon retire, so I am not very interested in learning more or being involved more than I need to.

3.2 | Information and information lines

To be involved as users, the respondents stated that it was important to have the necessary information in all parts of the process, from planning to day-to-day use. A general need for information was mentioned in all interviews, but there did not seem to have been any progress or improvement as regards information and information lines from the first to the last interview. The results indicate that health professionals wanted more involvement, and information and collaboration were highlighted as important factors in this context. There were some expectations of information that they did not experience were met.

HP 3 (Interview one): We get too little information. When we started to use welfare technology, I thought we should know what is on the market and what kind of technology we can actually get. I think we know too little about it.

Although there was a general need for increased information, there were also differences in how the health professionals in the same municipality experienced receiving information, especially between those who were in resource groups and those who were not.

HP3 (Interview four): (talking about what was new since the last interviews) We've had some door locks fitted. Otherwise, I have no idea.

HP 4 (Interview four): I know a lot because I'm in the resource group, and we've talked about it.

Another obstacle experienced by the health professionals was that managers were hesitant to provide information and feedback. An example of this was that the health professionals were aware of unstable or lack of network access in some areas in the municipalities, but experienced that no action was taken as a result of their feedback. They found that the management failed to note that important patient care information could be missing because of the unstable or missing network access, even though this was reported because of concern for patients' safety. The respondents described how such examples of not being heard led to a loss of motivation for user involvement.

New services involving welfare technology can present challenges relating to the exchange of information with all involved partners, such as IT departments and suppliers of the technology, as the results from this study indicate. The results show that the municipalities do not seem to have ensured adequately functioning procedures for information exchange between all parties involved. In the quote below, the respondent refers to a situation where they

had not been informed about a necessary software update, which meant that updating was not completed and, as a consequence, the welfare technology did not work.

HP 1 (Interview one): We received an SMS containing a.com address for the system with a link for updating. It did not come from the municipality's address. It would have been nice to get a message from the IT department or the management about updating. I thought it was SPAM and deleted the message.

Nonfunctioning welfare technology impacted on respondents' interest in and motivation for user involvement and reported that this kind of situations led to frustration and a feeling that welfare technology was unavailable and not trustworthy. Respondents stated that, when the technology did not work, one consequence could be that they resisted using it.

On the other hand, when the technology worked as expected, and the respondents had enough information and competence to use it, they felt this contributed to a better overview and access to information wherever they were; time was saved for this reason.

HP 3 (Interview one): If I have to call the emergency room when I'm with a patient, I don't have to run to the office. If you have EPR on your tablet, you can read about their medication and who their GP (General Practitioner) is. You can also read their old reports, and there's easy access to all the user information.

3.3 | Changing services and new ways of working

For all the respondents, the implementation of welfare technology led to continuous changes in the services and new ways of working with patients. The respondents felt, however, that the management did not require involvement, and few took responsibility for discussing opportunities and challenges with them as users during the change process and their concern about the patients. The limited involvement meant that respondents were worried about how the changes would affect their workdays in practice, and they argued that their unit was not prepared for changes following the implementation of the technology. An example was the increasing number of alarms from technologies, and how this impacted on their day-to-day work, as well as the concern they experienced about how to handle and follow-up the alarms.

HP 18 (Interview three): I think that the more alarms we get, this must be followed up by someone to take care of them. Who should that be? Should we reach out to even more patients?

Another example they gave was about the response time for safety alarms. Long response times could lead to a dangerous situation for the patient if help were not provided quickly enough. Alarms could also

be stressful for health professionals due to the risk of not arriving on time, and they experienced that their managers had limited focus on the stress; this could cause them as health professionals.

HP 5 (Interview five): We have one person who has a door sensor. There is a risk that the person will go out onto a busy road before we arrive. If you are with someone else and have a long distance to travel, this causes employees discomfort as there is a risk of not arriving on time.

Despite challenges arising from technology, several respondents stated that it was important to be able to see the benefits of using welfare technology. That insight into the positive sides could influence their attitude and desire for further user involvement. The technology also involved opportunities to make their workdays easier.

HP 1 (Interview four): We have long distances. I normally have to go back to the office to pick up a key. Then I realised that the patient had a digital door lock. So I used 5 min instead of 25 min to get to the patient.

3.4 | User involvement in the choice of welfare technology

Our results showed that there were different levels of involvement throughout the implementation process relating to welfare technology. Before the technology's acquisition, the respondents' experience was that some RNs' and NAs' in one municipality took part in a resource group and were involved and listened to in the process. In the end, however, for financial reasons, the management of the municipality did not follow their recommendation. The health professionals who took part in this group felt ignored, disappointed and not heard. This feeling was painful because their involvement was motivated by a wish for rational choices, which was about the quality of the services provided for older people living in their own homes.

HP 3 (Interview five): The management chose the medical robot that does not speak; it just beeps like an alarm clock. Patients who suffer some cognitive failure would not understand what that beeping means. The management of the municipality said that our choices should weigh most, but in the end, costs were what counted.

After implementation, however, some health professionals experienced involvement in the process of deciding which patients should be offered the available technology. They were also involved in an evaluation of welfare technology together with the patient after it had been in use for some time. Health professionals saw themselves as valuable sources of knowledge, as they knew the patients and the services well,

and experienced more acceptance and desire for involvement at this stage of the process.

HP 2 (Interview four): We look at potential users, and then we score them based on different parameters, to see which candidate will benefit most from the technology (medical robots). It is also important to evaluate regularly because they can normally only use it for a period of time.

3.5 | Concerns about the changes, and implications for services and patients

A feeling of not being involved in the process of implementing welfare technology led to concerns among the respondents about the implications the change in services had for the patients. One example was patients who had services replaced by technology such as medical robots. The respondents were concerned that the number of visits to some patients would decrease and that the importance of observation and follow-up of other needs was underestimated. The tension between the patients' freedom and social contact and its possible impact on the quality of nursing was discussed. Respondents reported that their concern about the quality of nursing was an important factor in relation to attitudes to the use of welfare technology.

HP 4 (Interview one): We don't catch up if there's something wrong, do we? If there's a patient who is ill... we only come when we bring them medication. There are many times we find other things wrong that we must pass on, or report or call the doctor about. But then we lose that opportunity, and that's what scared us when the robot is used.

The health professionals experienced that incentives to use welfare technology were primarily driven by a desire for efficiency among the management. Due to what seemed to be a lack of user involvement of health professionals, the respondents experienced that possible undesirable consequences, particularly related to safety and the quality of the patient services, were not clearly presented.

Another aspect of concern for patients reported by the respondents was that, if they became uncertain or sceptical about some of the technology, they were afraid that their concern would spread to the patients. They stated that competent and confident health professionals were important for high-quality services and for the patients to experience a feeling of safety.

HP 19 (Interview four): I have experienced that a consequence of my being too questioning and uncertain in connection the introduction of the technology is that the patients do not want to use it. We must have solid competence to reassure patients who are sceptical about it.

4 | DISCUSSION

We have explored what inhibits and promotes user involvement among health professionals in the implementation of welfare technology in home health care and found a series of factors that might have an impact on it.

The results indicate that the organisations were not prepared for the changes that were needed for the successful implementation of welfare technology. Furthermore, there appeared to be a top-down process in the organisation, whereby the health professionals were told what technology it had been decided to introduce, rather than being fully involved in the processes. There is reason to believe that the limited involvement of health professionals might hinder opportunities for the development of the services and use of resources, which Brewster et al. (2014) also found in their study.

Our findings indicate that, for a successful implementation process, managers should ask the health professionals about what information and competence they need. This is in line with the findings in a study by Dugstad et al. (2019). Unfortunately, our findings indicate little involvement among managers. Our results show that health professionals experienced not having enough competence in welfare technology, which was repeatedly mentioned in the interviews as the most important factor for acceptance and use. The importance of competence is in line with results from other studies (Dugstad et al., 2019; Saborowski & Kollak, 2015). One risk resulting from low competence could be that health professionals do not have sufficient insight and expertise to be active partners in the implementation process. Limited competence can also lead to uncertainty, which, in turn, can lead to workarounds, whereby the new systems are used in unintended ways or completely avoided, as we saw in our study. Some of the respondents felt uncomfortable about not mastering the technology in their day-to-day work. As a result, some continued to use old solutions as their private way of dealing with the challenges, which might have a negative impact on further implementation and use.

On the other hand, competent users tend to be more confident and more satisfied. The results indicate that satisfaction can lead to positive attitudes and a desire to increase the use of technology, as supported by Guise and Wiig (2017), who found that training created confidence and changed attitudes. The study by Berge (2016) revealed that acceptance is related to the systems being operational and used so that people experience improved job performance when using technology. Using information from, for example, EPR on digital tablets enabled health professionals to optimise and schedule work lists and driving routes, as well as to switch assignments between employees when they receive alarms. However, health professionals must be more flexible than before in terms of what tasks they perform. Requiring flexibility may create resistance.

Managers at all levels of the organisation only asked the health professionals for their opinions or suggestions to a limited extent, and nor did they ask for feedback on reported needs and suggestions for changes. When health professionals were asked, and their

recommendation was not followed up, they were disappointed and felt that democracy and involvement only existed in theory. This could inhibit further involvement and collaboration. As other studies have pointed out, the most effective way of ensuring successful implementation of new technologies is to cooperate with the groups that are expected to engage in implementing it, and secure the information flow (Cresswell et al., 2013; Dixon-Woods et al., 2011). Lack of involvement from the management may be perceived as passive resistance to user involvement.

As Cresswell et al. (2013) pointed out, infrastructure is often not given sufficient attention when welfare technology is implemented. As found in this study, network instability can undermine trust in welfare technology. It can lead to a feeling of uncertainty, frustration and concern about the quality of care. As pointed out by Berge (2018), trust is important for the acceptance of welfare technology. This, in turn, can affect attitudes and resistance to the use of such technology, as found in our study and in the study by Nilsen et al. (2016). The technology should, therefore, be properly tested and piloted in the organisation before being put into regular use (de Veer et al., 2011). User involvement throughout the process is likely to help to uncover challenges at an early stage so that resistance and infrastructure challenges can be taken seriously and interventions can be implemented where possible, as Kujala (2003) also points out. If this is not done, the result could be that health professionals do not use technology, as we found. This can lead to inefficient services and to technology not being used in an optimal way.

Health professionals do not always know of or acknowledge the opportunities welfare technology can provide. This may be due to limited competence, but also because of a lack of opportunities for involvement in the implementation process. This may lead to resistance to change, which has been found in other studies (Lapointe & Rivard, 2005; Nilsen et al., 2016). Nilsen et al. (2016) point out that it is important to address resistance and not underestimate it. Despite initial resistance to digital tablets, our study showed that, after some time, the health professionals found digital tablets useful. They experienced that EPR on the tablets contributed to a better quality of care because the health professionals had better access to necessary information and a better overview of the tasks to be performed. They also documented their assignments and assessments directly. This is in line with Nilsen et al. (2016), who found that resistance changed over time when welfare technology was implemented. This underlines the importance of user involvement throughout the implementation process and the need for competence. However, the results from this study show that some respondents did not actively take part or become involved in processes, even when they were given an opportunity to do so. This is a challenge for managers, and it sheds light on the challenging process of changing practice.

The findings from our study, like the results from Anderson et al. (2017), show that health professionals had a strong desire to do their best for patients, which may have an impact on choices and recommendations relating to welfare technology. In-depth

knowledge of patients and their needs can be crucial in terms of assigning the right service to the right patient. It can also be important, for example, to identify increased cognitive failure and evaluate when patients are no longer able to handle the technology, as pointed out in this study, as well as by Morley and Floridi (2019), and Holte and Wulff-Jacobsen (2016). Technologies that are thought to be beneficial and to enhance safety might, in fact, not be suitable if the patient is not getting the help he or she needs, as demonstrated by Stokke (2017). In these processes, a greater degree of user involvement by health professionals will be essential when planning safe home care, as well as providing input on the technology that is to be procured.

Although one of the main goals of introducing welfare technology is to reduce the number of visits, this can be a challenge for the health professionals, as shown in our study and by Brewster et al. (2014). Despite being positive about resources being freed up through the implementation of welfare technology where resources that can be used by others who cannot use welfare technology for different reasons, it can be challenging not seeing patients face-to-face daily (Saborowski & Kollak, 2015). Several of the respondents were concerned about patient safety, as well as reduced social contact, especially as regards patients with small social networks. This is an example of how the implementation of welfare technology often creates new needs. User involvement by patients, next of kin and health professionals is needed to meet the challenges and make suggestions for how to address them.

4.1 | Further research

User involvement is still a relatively new field of research, and much research remains to be done using different methods and perspectives. From our study, it seems that user involvement varies and that health professionals have many and complex experiences. Further studies of the process of implementing welfare technology should be carried out, with the focus on how health professionals are inspired by user involvement to change services and increase the use of welfare technology. Involvement in the development of the welfare technology itself, to ensure that the technology is better adapted to the services, is another field that should be explored further. Studies of what promotes user involvement could provide important input and help to make home nursing services more prepared for further innovation processes when new technology is implemented.

4.2 | Limitations of the study

The results provide a limited picture of the factors that promote or inhibit user involvement in the implementation of welfare technology, based on a sample of 16 health professionals from three municipalities. Home care services are undergoing development and changes, and experiences can, therefore, change quickly. We

nonetheless believe that this study identifies some important prerequisites for user involvement and the further implementation of welfare technology.

The authors' preconceptions can affect the interpretation of data, and the results can be coloured by this. The first author of this article has good knowledge of home care and thereby an understanding of the field. To ensure credibility through ongoing reflexivity, all steps in the analysis were discussed with all the authors and tentatively presented with clarity, as Morse (2015) recommends.

5 | CONCLUSION

From the perspective of the health professionals, there appeared to be unpreparedness for the changes that the implementation of welfare technology would lead to in the home care services. In the interviews, the respondents described management who seemed to want to implement welfare technology before the health professionals were ready and had enough competence to take advantage of it. The management had a limited focus on facilitation and the need for user involvement. The findings show that most of the health professionals wanted more involvement, but emphasised that more competence, information and collaborative arenas were necessary for involvement in the process. Limited competence also affected their attitudes and willingness to use the technology. The respondents underlined that they felt that the management wanted to see a quick financial gain when implementing new technology and that this could be at the expense of the quality of the service. They were also left with an impression of a quasi-democratic process when their professional recommendations were not followed. Without user involvement among health professionals, respondents were concerned about how the implementation of new technology would affect patient services and their work situation. Better facilitation and a stronger focus on user involvement among managers at all stages of the process of procuring and using welfare technology were identified as important, but demanding factors.

6 | RELEVANCE TO CLINICAL PRACTICE

The knowledge of factors that promote or inhibit user involvement, as experienced by health professionals and gained from this study, may contribute to the refinement of services and increase focus on providing opportunities for user involvement in the home care service. Our findings indicate that health professionals would like to be involved in the implementation processes of welfare technology to a higher degree. Our findings also indicate a need for increased attention on user involvement of health professionals when implementing welfare technology in municipal home health care. This may have a positive impact on reaching the health policy goal of increasing the use of welfare technology in home care services.

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CONFLICT OF INTEREST

The authors of the current study have no conflict of interest to declare.

AUTHOR'S CONTRIBUTION

Heidi Snoen Glomsås had chief responsibility for the data collection, data analysis and writing of the manuscript. The co-author Kristin Halvorsen was present at all the data collection. The co-authors, Ingrid Ruud Knutsen, Mariann Fossum and Kristin Halvorsen, contributed to the data analysis and writing of the manuscript.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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