"Safety at Home": Experiences From Testing of Video Communication Between Patients and Home Health Care Personnel

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Abstract

The implementation of welfare technology in Norwegian municipals is a governmental priority, but there is little research on transfer of technological solutions into regular health care services. The aim of the project "Safety at home" was to test and evaluate the use of video communication between patients and health care personnel. There were two test periods, with the initial phase focusing on patients with chronic obstructive pulmonary disease (COPD). The second phase focused on patients who most likely would benefit from video communication. Nine patients tested the equipment, and they were interviewed afterward. In addition, nursing personnel evaluated the project through focus group interviews. The results identified that the equipment was user friendly and contributed to the patients' feelings of safety. However, there were concerns about video calls replacing the "human touch" of home visits. The personnel also experienced that the technological solution had limitations, and new tasks added to their workload. The choice of focusing on COPD patients was considered a disadvantage, and we recommend that future projects should not be restricted by diagnosis and should target the most eligible candidates.

Introduction

To meet increased demands for care services from an aging population, governments across the world find technological-based services pivotal (Milligan, Roberts, & Mort, 2011; Sintonen & Immonen, 2013). The Norwegian government forwards the need for readjustment of municipal health care services with greater emphasis on welfare technology (Ministry of Health and Care Services, 2015). The future older generations live longer, have better health and functional ability, and have better resources in terms of education, economy, and housing conditions. They are also more accustomed to technology and desire independent living (Meld. St. 29, 2013). Modern information and communications technology (ICT) is expected to diminish cost inflation and increase quality of care and access to services, as well as to support aging in place and, therefore, reduce residential care placements (Milligan et al., 2011; Peek et al., 2014; Wu & Lu, 2014). Application of ICT into health care for older people includes positive impacts on service efficiency, patients' health, user satisfaction, and empowerment (Vedel, Akhlaghpour, Vaghefi, Bergman, & Lapointe, 2013).

Welfare technologies comprise technological assistance that contributes to safety, security, social participation, mobility, and physical and cultural activity (Meld. St. 29,

2013). An often-used term is telehealth, meaning the delivery of health care at a distance by using ICT (Wade, Karnon, Elshaug, & Hiller, 2010). In this article, we focus on the term telecare, which brings ICT-based health care services directly to the patients' homes, aiming to support safety, autonomy, independent living, and welfare of the frail, old, or disabled people (Milligan et al., 2011; Sintonen & Immonen, 2013; Wu & Lu, 2014). The Norwegian program for welfare technology aims to integrate ICT into health care services by 2020 (Meld. St. 29, 2013). The market for welfare technology is considered immature regarding demand and supply of customized solutions for municipalities, and both development and testing of solutions are needed. Several factors determine whether the introduction of welfare technology will be beneficial, and it requires thorough planning and evaluation (Melting & Frantzen, 2015). Devik and Hellzen (2012) stated that knowledge of welfare technology is

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fragmented, and there are many questions unanswered. In particular, there is need for studies analyzing the applicability of telecare for specific patient groups (Sintonen & Immonen, 2013), and there is a lack of studies about transfer of telehealth solutions into regular health care (van den Berg, Schumann, Kraft, & Hoffmann, 2012). In this article, we share our experiences from the project "Safety at home," which tested how video communication may be used as part of the home health care services for patients in a municipal in Western Norway.

Technology in Care Services for Older People

Devik and Hellzen (2012) stated that, although adopting new technology may be challenging in old age, welfare technology is widely accepted by older people and their caregivers, if it is experienced as beneficial and easy to use. Especially, the frail old tend to find new technology difficult to master, and insecurity and physical restrictions related to ICT use reduce the perceived usefulness and willingness to receive such services (Sintonen & Immonen, 2013). The readiness to accept and use new technology can be a challenge, and especially, seniors who did not grow up with these types of technologies may struggle with adaptation (Heart & Kalderon, 2013; Peek et al., 2014). Barriers in utilizing telehealth for older people may be issues of familiarity, privacy and trust, willingness to ask for help, and design (Fischer, David, Crotty, Dierks, & Safran, 2014). In addition, frontline staff and, particularly, nurses are key to the successful delivery of welfare technology into care services. Brewster, Mountain, Wessels, Kelly, and Hawley (2014) found that a main barrier is lack of acceptance of this new way of working. Therefore, it is of great importance that a nursing staff receives further education and information about telehealth (Anguita, 2012; Brewster et al., 2014).

Video communication has been used for many years in home care services and is found to be cost-effective; it may reduce hospital admissions and transfers to nursing home care and may provide greater user satisfaction (Finkelstein, Speedie, Zhou, Potthoff, & Ratner, 2011; Wade et al., 2010). Studies of real-time video find that video calls are less time-consuming than on-site visits by personnel and reduce the need for traveling; thus, they can provide cost savings (Arnaert & Delesie, 2001; Wade et al., 2010). Another advantage is the ability to provide care "just-in-time," with no waiting time. Compared with the telephone, the visual component of video provides a richer communication experience, because it allows the user to better understand how the other is doing; it enhances the perceptions of social presence and contributes to effective communication (Similä, Harjumaa, Isomursu, Ervasti, & Moilanen, 2014). The study of Savolainen, Hanson, Magnusson, and Gustavsson (2008) connected patients at home with a call center utilizing video-conferences and found significant individual differences in the use of the videophone. However, the frequent users felt

less isolated and seemed to benefit from the opportunity to make new friends. Video enables a personalized, trusting relationship to develop between patients and nurses, which may permit talking about needs, expectations, and feelings (Arnaert & Delesie, 2001). Thus, video communication fosters older peoples' autonomy by strengthening their emotional, relational, and social abilities.

In our project, we initially aimed to include only patients with chronic obstructive pulmonary disease (COPD). Patients with COPD were one of the first groups receiving home-based telecare, and later, such services expanded to include other vulnerable populations (Wu & Lu, 2014). Horton (2008) found that, when providing telecare to older people with COPD, nurses, to some extent, empowered their patients by fostering self-monitoring and information access. Another COPD study tested the acceptability and effectiveness of telecare for older patients. The results did not demonstrate positive effects on the use of health services, but the telecare service was acceptable with a high level of patient satisfaction (Chau et al., 2012). Patients with COPD may benefit from telecare, which includes videoconferencing, with outcomes such as enhanced patient satisfaction, quality of life, general health, and fewer hospital admissions (van den Berg et al., 2012). However, although studies demonstrate benefits for the intervention group, these are often small or insignificant. Furthermore, it is difficult to compare studies, due to differences in included patients and how the telecare follow-up was conducted (Lundell, Holmner, Rehn, Nyberg, & Wadell, 2015). Other researchers argue that interventions to improve self-management skills and follow-up among patients with COPD fail to result in clinically meaningful improvements in the patients' health status (Coultas, Frederick, Barnett, Singh, & Wludyka, 2005). Overall, there are seemingly mixed results regarding the effectiveness of telecare for older people with COPD.

Project "Safety at Home"— Background and Implementation

The chief municipal executive instituted the project, and it involved one unit from the department of home health care services, the ICT department, an external ICT supplier, the local health authority, and the regional research and development unit. The project collaborated with the development center for nursing homes and home care services, which financed the project leader position. The second author led the project group, where all involved parties were represented, together with nurses representing the home health care unit. The project group wished to test technological solutions that benefit patients, service providers, and ICT suppliers, with focus on finding solutions without expensive investment needs in technology or equipment. The decision was to try out how video communication may be included as part of the care for patients in home health care services. It

was anticipated that video "visits" could provide safety for patients in their own homes, improve quality of life, and perhaps prevent readmissions to the hospital. Sound and image quality, user participation, and knowledge development for patients and home health care personnel were the priority areas.

At the outset of the project, it was decided to include only patients with COPD. The project group aimed to increase knowledge of COPD among home care personnel, hence improving the follow-up for this patient group. The first test period was completed within 6 months from August 2015, and then, the project expanded to a second test period, which ended in November 2016. The initial focus was on the identification of three to five patients with COPD who were able to communicate by video and who would be likely to experience safety by using this technological solution. In the second test period, the focus was to include patients who most likely would benefit from video communication but was not restricted to patients with COPD diagnosis. There were no fees for participation.

High definition Internet through fiber was provided to the included patients, together with a television screen with touch function and built-in camera. The patient touched the screen to accept the call, and then, the picture and sound switched on. In the second test period, one patient also tested video calls through an app on the mobile phone. At the office of the home health care service, a television screen was installed and connected to the Internet. In addition, nursing personnel received two tablets for use while on duty. The system was operated between 7:30 a.m. and 9:00 p.m. and was not in use at nighttime. Video calls were first received at the office on weekdays until 3:00 p.m. If no answer, the call was redirected to the tablet of Nurse 1 and Nurse 2. If the call was unanswered, it was redirected back to the office, and then for a second round to the nurses' tablets. A message on the screen would appear when a call was missed. When the office was closed, the calls went directly to the tablets. These tablets were only connected to the mobile network. Because of some uncertainty regarding response to video calls, participants were advised to use their security alarm in acute situations, also during the test period.

There is need for increased competence of employees and patients, both in advance of and alongside the introduction of welfare technology (Meld. St. 29, 2013). Personnel received technical training on a "kick off" seminar, where they tested the equipment. In addition, the local hospital gave educational training for use of checklists and handling the processing aids in COPD. The nurses received a folder with technical manuals and charts on the processing aids in COPD to support their work with patients at home. The patients were given a user guide on a laminated A4 sheet of text and photo, and contact information if they needed assistance with the equipment.

Materials and Method

Participants

In the first test period, we targeted patients with a COPD diagnosis. Excluded were patients without fiber network and where installation of fiber network would be too costly, along with patients with cognitive impairment who were unable to use the video equipment. Potential participants had to reside in the district of the involved unit and were contacted by the home health care service. Further assessment was done through a home visit from a nurse, together with the project leader, who filled out a mapping form in welfare technology (Sintef, 2014). Based on the assessment, four patients with varying degrees of COPD were included, one male and three females, aged 50 to 71 years. One of them also had a follow-up of diabetes. In the second test period, it was decided not to focus on patients with COPD. Thus, the project included an older couple, a younger person with a psychiatric follow-up, an older person with cancer, and an older person with Parkinson's disease. These participants were aged 27 to 85 years, three females and two males. All the patients lived alone, except for the couple. All the participants received help in their homes with practical assistance, and most patients also had a security alarm. About half of them received supervision regarding personal hygiene, and several had daily home visits. One patient received help with blood sugar readings and insulin. Another patient received support with medication management.

There were one male and seven female nurses in the focus groups. Their age was between 24 and 43 years; thus, their clinical experience from home health care differed from 1 to more than 10 years. One nurse was assistant manager and worked only during the daytime. The other nurses worked regular shifts. Two nurses participated in the project group and thus had special interest in the topic.

Ethical Considerations

The project did not require approval by the Regional Ethics Committee (Ref.: 2015/510). In accordance with the Personal Data Act, the project was registered with the Data Protection Authority. Both oral and written information about the project were provided. The participation was voluntary, and anonymity was preserved. The patients signed a consent form, whereas the nurses in the focus groups gave oral consent to participate.

Data Collection

The project gathered data from individual interviews with the included patients. The project leader conducted the interviews at the participants' home and focused on their experiences of using video communication. Regarding the couple, only the wife participated in the interview. Four nurses from the home health care personnel participated in the first focus group, with the project leader as interviewer and the first author as moderator (Halkier,

Table 1. Themes and subthemes.

Main themes	Subthemes
Technology challenges	User friendliness
	Using the screens
	New tasks and workload
The human touch	Video calls replacing visits
	Impact on the illness
	Feeling safe
Future recommendations	

2010). In the second focus group, six nurses participated, and two nurses participated in both groups. The focus groups aimed to provide insight into the delivery of services and interaction with patients, together with an extended understanding of issues that the patients brought forward in their interviews. Both authors were involved in creating an interview guide with open questions (Kvale, 2015). The patients were asked about how the technical equipment was perceived regarding information beforehand and training, installation, function, sound, and image. They were also asked whether the equipment had an impact on their feelings of safety and their coping with illness or health problems. Other questions addressed experiences of being part of the project, with focus on describing episodes of using video communication and describing any recommendations for improvements. Similar questions were discussed in the focus groups. However, the nurses also focused on issues regarding implementation of video communication into their daily care practice, both regarding meeting the individual patient's needs and organizational matters. The focus groups lasted about 45 min, and individual interviews lasted between 10 and 45 min. All interviews were recorded and transcribed.

Data Analysis

NVivo 10 was used in the process of transcription, coding, and analysis of qualitative data. Furthermore, we used a qualitative thematic analysis to enhance the understanding of the participants' experiences of using video communication (Halkier, 2010; Kvale, 2015). The first author analyzed the content of each interview and discussed the findings with the coauthor in several consultation sessions (Malterud, 2011). Both authors were involved in the final drafting of the findings. Table 1 presents the themes that represent findings from both individual interviews and focus groups together, except for the theme *future recommendations*, which only represents findings from the focus groups.

Findings

Technology Challenges

User friendliness. Several of the patients had not used ICT before entering the project, and some of them did not own a personal computer. Nevertheless, all the participants thought the video communication equipment was easy to use, and the user guide was easy to understand. They assessed the equipment as user friendly, and one patient said, "Somehow it was in my hands at once. What buttons I should press." Although the participants thought that the information and training ahead was sufficient, a few of the participants remarked that it was difficult to remember all they needed to know.

The nurses were satisfied with the "kick off" information and practical training in using the equipment, but not all of the personnel participated in the training, and some remarked that the time span between training and start-up was too long. One of the nurses remarked, "It's basically not so much training that is needed. For this with the screen and stuff, it's very easy to show, how the tablet works, how the screen works, it's easy to use. That's what's good."

Furthermore, the focus group participants pointed out that the project was postponed a few times and that not everyone was prepared when it started. The equipment was not difficult to use; the problem, rather, was with the unpreparedness:

> We knew about it ahead, and talked about it. But when you suddenly get it in your hands, and it is a long time since the kick off . . . it is not fresh . . . Unexpectedly when you get to work and do not know that it starts, on that shift. Then the roller blind goes down.

When assessing the equipment, the nurses thought the screens were easy to use. They had two different sizes of tablets, and the largest was considered best, because it was easier to see the image of, for instance, an insulin pen. However, it could sometimes be difficult to see details if the image was not in the right focus. Talking with patients could be problematic because of staff sharing the office, where the television screen was mounted on the office wall.

Using the screens. Video communication brings both benefits and drawbacks. The patients were able to shut off the camera when the screen was not in use, which was an advantage. One participant thought that exposure in a video image was unpleasant: "It's okay that I see them, but I don't like that they see me." She explained that it was because of her introvert nature and that she felt it was problematic to talk with strangers.

Three of the patients in the first test period did not use the equipment much and reported both video image and sound to be adequate. However, the patients with daily video calls complained about bad quality regarding both sound and image. One participant said it was often difficult to hear what the nurses said, and explained, "Sometimes I saw them, but I did not understand what they said, because the sound was jagged. Other times we could talk but the image was bad."

The quality of the image depended upon where the nurses were when they called. Most of the time it was good, but sometimes both sound and image were unsatisfactory. This was one patient's opinion: "It was often that we had only

sound or image. It was mainly when the nurses were in the medication room or was out driving." The nurses confirmed that there were problems with the mobile network connection when they called from the medication room at the home health care center. They experienced that the mobile network signals were mostly good when they called from the car; however, this was dependent upon their location.

One younger participant also tried video calls with an app on a personal mobile phone. This app was easy to use but was impractical, because it needed to be switched on to enable video communication. The patient often switched it off to save battery power and then forgot to switch it on before the scheduled video call. In addition, the connection was sometimes bad, with low-quality image and sound. The benefit with the app solution was the freedom to be outside and not being in need of staying at home to receive calls. The patient explained,

> Unfortunately, one must structure the daily life according to what suits the home health care services. But with this solution, you do not need that, to the same degree. You can be on the move, and also you can call them if you need to.

In general, all participants were satisfied with the television screen, although some thought the size was too large. If they could choose, the participants would have liked to have more options. For some patients, the television screen was a bit too large to fit in their homes, and the screen had to be fixed to the wall. For a patient with COPD, it would have been better to have a smaller tablet lying next to the armchair. Even walking half a meter is not always easy when one suffers an anxiety attack, like this patient said, "Yes, it was a few steps. But when you get that anxiety attack and cannot breathe. Then you don't manage two or three steps. You become sitting there then."

The nurses thought it would be better for some patients, while some perhaps would lose or misplace a smaller device. Other patients might have been better off with an app on the mobile phone. Several participants thought it would have been better to be able to choose between these possibilities. Being able to switch on the screen with a remote control was also requested as an option.

During work, the nurses kept the tablet in the car. When they got back from an assignment, they had to check whether there was a lost call. In the first test period, the staff often forgot to check, mostly because there were few calls. It would have been better if the tablet had given a sign, like a blinking light, whenever there was a lost call. This was clearly an area of improvement. The patients considered it problematic that, when they called, they did not always receive an answer immediately. One patient commented, "But I also experienced that I received no answer . . . After a while they called me up again." Other patients experienced that, if they missed the scheduled video call and called back immediately, there was often no answer.

New tasks and workload. The nurses thought the project had good intentions. However, their concern was that they spent time on new tasks such as assessment of eligible patients, facilitating, and testing of equipment. In addition, technical support takes time, such as, "Things that suddenly do not work. Maybe they have logged off, they have forgotten something, or they have pulled out the power plug, and you must check up why things happen."

Fear of fire was also a concern, or there were other reasons that could cause the systems to shut down. One of the nurses remarked, "The motivation may not have been on top since there has not been so much to save. It's rather been more work."

Especially in the second focus group, several nurses were concerned about the video calls "on top of" the regular care services. When replacing a visit in the evening with a video call, they sometimes evaluated that the patient needed a visit in addition to the call. Thus, when doing both the video assignment and a home visit, the nurses use even more time. Instead, they could have gone by in the first place. The nurses also thought that it was easier to visit the person than call in the evenings, because they were often nearby on other assignments. It was also considered easier to do a house visit in situations where the patient did not answer the call. One nurse remarked, "Yes, then you have the overview at once, the patient is there, the patient are doing fine, if you drive by."

The Human Touch

Video calls replacing visits. The patients said that they did not experience much change in the support from the home health care personnel. However, being able to contact the nurses by video communication was an advantage:

> I could have called her on the phone, but it is not the same . . . Then I can see if she perceives what I say, and I look at her facial expression. Yes. That is not as easy on the phone . . . We can say things, and it may sound as the other on the phone understands, but still don't. That's the big difference. And it's pretty big.

The staff shared the view of the advantage of using video, as one nurse said, "I could see the patients, and the patients could see me. You had a good dialogue somehow. It was better to call using the television screen . . . than using the phone."

In one situation, video communication was used for medication follow-up. The patient thought this was a good solution. However, the nurses thought it was not as good as actually being there with the patient. They were concerned about the possibility of being deceived by the patient and also about bad image quality: "It is not always easy to observe, it is much better being there, face to face physically, to see if they really take their medication."

A few patients had the opportunity to call by video as a supplement to the regular visits but did not use the equipment

much. One patient explained the experience of use: "I called one time I had anxiety, and spoke with someone there. And it helped, yes, it really did. But, uh, I was not entirely well afterwards." Another patient used the camera to communicate with the nurses to safeguard that the insulin pen was adjusted to the right dose. One daily home visit was replaced by video, illustrated by this story:

> The insulin measurements on the evening, then they didn't come by. They contacted me from the car, wherever they were. Then I measured and also adjusted the insulin, and held it up against the screen toward the camera so that they could see that I had set it right.

At first, this patient thought the camera was a bit small, regarding how to show the pen, but learned to hold the pen so that the nurses could see the part with the measuring lines.

However, many patients thought it was better to have a house visit. One remark about video calls was, "It can be very helpful. Especially in those cases where people have other human contacts, because it does not substitute for another human being." Furthermore, this patient added,

> If you need contact with another person, even if it is only for a few minutes, of course a machine and an image can never replace that human being . . . We are happy that we also receive a home visit . . . It feels safe that they come by.

Another participant said,

> I felt it was very pleasant when they visited, when I became ill. Then it was very good of them to come to my door. We sat and talked, and especially one nurse helped me a lot. I felt I could ask her about much and she understood me well . . . I think it was better when they came by, before, having the screen. I felt that I . . . I had more personal contact when they came by, at least when I felt sick. But when I got the screen, I did not feel so sick, and then the video-call was just fine.

The nurses discussed how the patients might feel about replacing a home visit with a video call. One situation was described as follows:

> She's very glad when people come by. It's great fun when we visit. I think she probably thinks it's a bit like that, a little disappointing that it takes place on the screen. But she hasn't said anything aloud about it.

The nurses talked about how one participant wished to quit the project, because the screen was experienced as replacing human contact. The patient's mental health worsened, and the staff was asked to visit in person. Although the nurses were considerate to the potential time saving from video visits, they perceived it as problematic that most patients prefer home visits. The human presence is important, as this dialogue presents:

> Nurse 2: I feel that many say that the only person I see today, it's you who come by.
> Nurse 3: I think that might be what is the most difficult to replace with video. Because if you go there to have a conversation, then they usually need that human contact.
> Nurse 2: And not seeing you, yes they often have contact with people on the phone. It is not the same as you come into their home . . . , for most patients at least.

Impact on the illness. The nurses experienced that one of the patients took more responsibility for monitoring his diabetes during the project. At the end of the trial period, this patient kept up the enhanced self-care ability. There was not much change in the follow-up of the patients with COPD, and one participant said that the general practitioner and her family were the ones contacted when in need of assistance. This patient also told about the help from a self-management course:

> I coped with the anxiety myself and . . . and I had the medicine that I took . . . I tried to think back on what we learned in the course. Diaphragmatic breathing and stuff, but it's not always easy. It's awful when the anxiety fully sets in . . .

The staff assessed the COPD teaching and the information folder as helpful, as well as the practical training in technical treatment aids. However, they did not experience the need for this knowledge during the project.

Feeling safe. When asked about it, all the participants would recommend video communication. One main reason was that it improves communication to see the person with whom you talk: "You have direct contact when you're talking on the phone also, but you cannot see the other person. There is something quite—It's sort of like you have that person in your living room."

Another reason was that it provided a feeling of safety. One patient said, "I felt more safe" when remarking on the benefit about having the screen at home. Another patient said, "It is safer. It is someone to talk with . . . I felt kind of that they, that, that they looked after me." Several patients felt safer just knowing that they had the possibility to call, although not actually using it much. One patient explained,

> If I had to, I would have used it, if I had not reached relatives or others. Because then I knew that with the screen, I would have reached another person. So there is a safety in this in any case.

Having the nurse just one call away helped to support the psychological health of the patient: "All that creates a sense of safety, it gets you some steps further up the ladder." To receive a daily call on the screen was reassuring, as portrayed in this patient's story:

I noticed when they did not call, or the call was delayed. So I think it was very nice when they called me. I felt it gave me safety . . . In the beginning; they came by a few days, and called the other days. But later it was almost only the video-calls . . . To me that was just fine. I did not need them to come by; my needs were met by the call.

For the younger patient, the opportunity to call with the video screen was perceived as a low threshold service and, therefore, added to feeling safe. The patients cannot call the home health service outside the office hours, but with the video screen, the participants could call when in need of assistance within the project hours. Availability at all hours was suggested as follows:

If I need to talk to someone at nighttime, I must call the emergency clinic. Then they decide if the home health care service should be contacted, and eventually someone comes by. But I most often only need someone to talk with, that is enough . . . To have a screen where you can call, they see you and you see them, and they can evaluate through the image, how they perceive you both regarding tone of voice and facial expressions . . . And I think that from that, how the home health care service evaluate you then, one may initiate interventions regarding emergency services, if one see that the person obviously is in need of help that the home health care services cannot offer.

Several patients thought it was safer with video communication than using the security alarm, which, in many cases, has a longer response time. However, a few patients' views were that the video call did not add to feeling safe, because the security alarm met their needs. In addition, it is important to understand that, although having the screen gave a sense of safety, most of the participants prefer home visits. One patient remarked, "It's sort of better face-to-face." Another patient said, "I thought it was better to have people with me than to see a face on the screen . . . But people are different . . . Simply for feeling safe."

The focus group discussed how one patient seemed to cope on her own and did not need much assistance. One nurse said, "She was not so interested in using the screen." Another nurse replied,

We tried to convince her to accept the screen instead of us, because it could really have worked out fine for her. But she wouldn't, she wouldn't use the screen. I think we went a lot in and out of her house, sat down and talked to her, and she was fully aware of everything she was doing, so we could have used the screen. But she didn't want that.

Replacing one visit was tried a couple of days, but then, they went back to home visits. The staff agreed that the screen did not add to increased safety for this particular patient.

Future Recommendations

The first focus group participants discussed the development of the project. One remark was, "I think the project in itself

is great, we have just been unfortunate." They experienced that the Internet through fiber technology was not available at home for those patients that they most desired to include in the project. Lack of high definition fiber technology was assessed as the "main obstacle." Another nurse remarked, "We have not tested on those who we actually thought had been the best candidates."

In the start-up of the project, it was decided to focus on patients with COPD. One patient group was regarded as an advantage in the planning process, but this criterion inhibited the inclusion of the best candidates. One opinion was, "I think it would have been much more successful if we had chosen patients who fitted into the project, regardless of diagnosis." In the follow-up of the project, the nurses recommended focusing on younger patients and other patient groups with different needs. One particular group mentioned was diabetes patients, because this group could benefit from being able to be more self-reliant and only need assistance with blood sugar measurements from a distance, such as by video calls.

Nurse 1: I think that diabetes is a straightforward group. It could be someone who thinks it's okay to have us there, but really, they don't need us. That it would be fine only to demonstrate, somehow.
Nurse 3: Several patients would have tried it themselves if a nurse were there. They might hesitate to learn this because they feel insecure, but not if you still are in contact and can teach them.

The group also discussed that younger patients are perhaps a better target group because of more familiarity with screens. Older patients tended to be unwilling or were unable to use the screen.

Nurse 3: They must be younger, the older doesn't want the screen.
Nurse 4: Or they don't manage to use it. And they become disturbed by having an extra screen in the house, and also when they touched the screen they didn't understand. That has been part of the challenge.

However, the focus group also pointed out that most of the patients of home health care services are older people, and that the younger patients are perhaps not in stabile illness situations or are too sick to be included in the project.

The nurses also discussed that replacing home visits at nighttime would be preferable. This could save much time and money and provide good follow-up without needing to disturb the patients' nocturnal sleep. However, there are both practical and ethical issues regarding the placing of a camera for nighttime supervision.

Regarding improvements, it was suggested that an office could answer the calls so that the nurses did not have to take the tablets with them on duty. Another solution would be an

integration of the video communication system with their hand-held mobile units. Although the screen on the mobile might be a little small, it would have been better, because this device would be in a staff member's pocket and available at all times. In the continuance of the project, the staff recommended reassuring that the included participants actually use the screen. Therefore, the patients in the second test period signed an agreement to increase the awareness of the project intention to replace a home visit by video.

In the second interview, the nurses suggested that the allocation office should grant future patients a video visit early in the process of receiving home health care, in some way, not giving them the opportunity to choose. The nurses thought that calls are sufficient for some patients, and may save time:

> Nurse 5: You use less time than if you come by. When focusing on the screen it was different.
>
> Nurse 6: It was more concrete what to follow up, if they were doing fine. If you came on a home visit, they almost expected you to stay for a social call.
>
> Nurse 3: They did not actually need more than the conversation on the screen.

The nurses considered video communication as helpful, that it can provide increased self-reliance and self-esteem for some patients. It is, however, important that it does not replace visits for patients who need that human contact. All the focus group participants agreed that "technology is the future" and that video calls do not necessarily reduce the quality of care. One nurse recommended,

> If we find the right patients and meet their needs, then I think this can become great. They know they can see us immediately. Because if they call on the security alarm, it may take a while before we arrive. It is not sure that they need us present; it is enough to see someone and hear their voice.

Discussion

Telehealth and telecare represents attractive and cost-efficient solutions, capable of meeting the health care needs of people living with long-term conditions (Anguita, 2012; Brewster et al., 2014). The government expects that implementation of welfare technology may solve specific challenges and meet the needs of those receiving health care services (Meld. St. 29, 2013). Technology is, however, no panacea for challenges in old age, but if used wisely, it holds the potential to bolster the position of vulnerable, aging people (Arnaert & Delesie, 2001). Key concepts in our project were to help the patients cope with everyday life and increase their feeling of safety with the possibility of communicating through video with nursing personnel when needed.

Initially, we believed that supporting patients with COPD might prevent hospitalization or institutional services (Polisena et al., 2010; van den Berg et al., 2012). COPD

affects many older people who may have weakened sensory and psychomotor functions and lessened activity tolerance, and these factors must be considered when designing telecare services to avoid unnecessary physical exertion (Chau et al., 2012). One of the patients in our project experienced that moving a few steps to turn on the screen was impossible when suffering from anxiety. Thus, we suggest that there should be an option to have a device that is not fixed to the wall. We also experienced that targeting patients with COPD limited the inclusion of the best test candidates to test video communication. It was other patients who had the most benefit from our project. New technology is believed to enhance patient's participation and coping (Meld. St. 26, 2015). The nurses perceived that one patient took more responsibility for monitoring his diabetes during the project, and that the self-care ability was present after the test period. There was, however, not much change in the follow-up of the patients with COPD. In our opinion, it is important not to narrow the focus and exclude participants who might benefit from video communication, such as the example with diabetes support. Thus, in the second test period, we focused on a wider range of patients, concerning both age and complexity of health statuses.

Research trials demonstrate the efficacy of telecare, and policy makers are keen to implement them (Meld. St. 26, 2015; Sintonen & Immonen, 2013; Vedel et al., 2013). However, there are several concerns about how the anticipated benefits may be put into practice. Greenhalgh et al. (2013) found, in their study, that the technology provided was not customized according to the individual needs of the participants. In our project, the participants found the video equipment to be user friendly and satisfactory. According to Wade et al. (2010), telehealth studies tend to report high patient satisfaction, and such results may be biased, due to the study participants' desirability and acceptance. Wu and Lu (2014) referred to older people accepting home-based telecare in trials, but if end users must pay for services, their motivation to participate will diminish. To make technology useful, the abilities and desires of older people themselves in relation to telecare must be understood (Milligan et al., 2011; Sintonen & Immonen, 2013). In our opinion, it is important to remember that patients with the same diagnosis, such as COPD, or in the same age group may have very different care needs. The individual's needs are diverse and unique. When asking about satisfaction with the actual follow-up provided by video communications, our results show that the patients had diverse experiences. Aging people's needs of support may also vary from day to day. In our project, some participants reported different needs, and at times, video support was considered insufficient.

Greenhalgh et al. (2013) reminded us that telecare cannot perform care on its own. One major concern in our project was that video calls might replace "human touch" provided by home visits. Video communication was found to be beneficial for some of the patients, while others preferred the

personal visit from nursing personnel. The involved nurses pointed to the disadvantages of their not being there. The nurses' main concern was that the patients could become lonely, if they were the only persons coming by. Arnaert and Delesie (2001) suggested that video communication studies demonstrate that social isolation does not increase. However, it is our opinion that this matter should be investigated further, especially the consequences regarding loneliness. Another problem raised by the nurses was that some patients did not comply with the notion that the video call should be a substitute for a home visit. Therefore, it was suggested to better inform about the intention of the project, and that the video call was not an addition to the current services. Furthermore, the allocation office was advised to grant video calls more often in the early stages of receiving home health care support. Thus, future patients may become more accustomed to this type of support. Wade et al. (2010) pointed to the risk of additional use of health workforce, if telehealth visits are added and not substituted for existing services.

Telecare should contribute to better resource utilization and quality of services (Meld. St. 26, 2015). Furthermore, one key to implementation of technology is to save time by using the staff hours more efficiently. What was discovered in our project was that many nurses visited one of the patients, because the nurses were nearby anyways. Thus, the nurses were noncompliant with the video communication assignment. The nurses thought they could better control that the medication was taken when present with the patient. It seemed that their professional opinion was that saving time from using video calls for this assignment did not outweigh the lack of control. Therefore, it is of utmost importance that the staff agrees with the decision of using video communication. It is clearly time efficient to call the patient from the office or the car. The objective is to save both time and money. However, Anguita (2012) pointed to lack of empirical evidence to support the assumption that telecare can provide long-term efficiency gains, and that, if nurses fear losing the possibility to observe the patients' health state, they tend to increase their workload by carrying on with doing as many home visits as they did before. In our project, the nurses questioned the time-saving effect, because many of their assignments were within a small geographical area. They suggested that the cost savings of video calls is greater in rural communities.

Regarding the advantages of using a camera, seeing the person to whom you talk on the screen added to the experience of connectedness and dialogue, as found by Similä et al. (2014). Another benefit was for the patients to be able to reach someone quickly if needed. The patients felt they were allowed to call whenever they were in need, and although many of them did not utilize this opportunity, they felt the presence of the video screen was a safety measure. The very idea of being able to reach another person and see his or her face on the screen was reassuring. However, when actually trying the equipment, the patients considered it problematic

that, when they called, they did not always receive an answer immediately. This could have contributed to the lack of use by some participants. Furthermore, it is our experience that older patients often live in older houses, where broadband Internet is not available. This limited the inclusion of eligible candidates in the project. In addition, several participants reported bad quality of both image and sound, due to insufficient connectivity. There were also concerns about the screens used; although the screens were user friendly, the participants suggested there should be more options. The mobile app tested by one patient provided freedom to receive calls outside the home; however, this app was evaluated as not sufficiently user friendly compared with other apps commonly in use in the consumer market. Tablets and apps could add to the freedom of the patients, because they could bring the technology with them and not be restricted to a fixed place. We believe freedom and perceived benefits of video communication are important for both patients' and health care personnel's willingness, motivation, and acceptance of such services (Wade et al., 2010; Wu & Lu, 2014).

The nurses in our project were, furthermore, concerned that sometimes patients prefer visits, because it feels nice, like a "social call," and not because they needed the visit from a professional standpoint. The opinions of several patients confirmed this; if they could choose, they would prefer the home visit. Older people will, in the future, be more used to ICT (Meld. St. 29, 2013) and will probably be more accustomed to this type of follow-up from health care personnel. Although accepting technological services, older people tend to be selective and invest resources only when they perceive the benefits to be satisfactory (Heart & Kalderon, 2013). Therefore, health technology must be kept simple and be perceived as useful, and support must be offered to succeed. However, we also wonder about the right balance between presence and distance. Our results suggest that the video calls did not add to the safety of all participants. It is important to understand why most of the patients in our project preferred the home visit and presence of a human being. It is timely to ask the following question: What do we lose with video communication?

Telecare technology creates not only new opportunities but also new dilemmas (Devik & Hellzen, 2012). Our project shows that there are still issues regarding video communication that must be resolved before it can be integrated fully into the everyday work of personnel in home care services. When the communication is often of unsatisfactory quality and not operated during all hours, it is questionable whether it adds to the feeling of safety if compared with the security alarm system. In our project, it was rather a supplement to the alarm, and as such, it must be tailored to the individual participant. The study of Finkelstein et al. (2011) concludes that the frail old are able to adapt to home-based telehealth services. Other studies find that older people are commonly skeptical and not ready to adopt health-related ICT (Fischer et al., 2014; Heart & Kalderon, 2013); however, this was not

our overall experience. Rather, when faced with the question of replacing a visit with video calls, most participants preferred the home visit. That clearly had a better quality than the remote video visit.

Limitations

The findings in qualitative studies may not be generalized to other contexts (Malterud, 2011), although our experiences may be helpful for others. This project provides insight into how using video communication may be beneficiary for some individuals, while it is not the right solution for all types of patients. We recommend further research regarding the impact of video services and possible consequences regarding loneliness. One strength of our project is the testing of welfare technology as a part of the regular health care services (van den Berg et al., 2012). It is necessary to test the efficacy of video calls on a larger scale, and it is likely to be more beneficial in rural areas. We suggest that video communication should be tested for different types of patients regarding follow-up needs and also explored more specifically with different age groups.

Conclusion

The project results identified that the equipment was user friendly and contributed to the patients' feeling of safety. However, the participants also experienced that the technological solution had limitations, and new tasks added to the nurses' workload. There were concerns about video calls replacing the "human touch" provided by home visits. In our opinion, it is important to remember that patients with the same diagnosis, such as COPD, or in the same age group may have very different care needs. Video communication was found to be beneficial for some of the patients, while others preferred the personal visit from nursing personnel. We recommend that future projects should not be restricted to specific patient groups and should target the most eligible candidates. Thus, the patient assessment prior to inclusion should be based on health status, ICT skills, the nature of the services provided, and perhaps the travel distance to the residence. Furthermore, the patient and relatives should be informed that video in most cases is not an additional service but replaces other types of services. We are also concerned about troublesome communication regarding image and sound quality when using the mobile network and that the chosen technological solution was not tailored to the participants' needs. Hence, there are still issues regarding infrastructure and technological solutions to solve if we are to reach the government goals of more efficient services.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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