New Technology in Norwegian Municipalities' Health Care Services:
Experiences in Small Rural Municipalities

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Abstract

New assistive technology appears as part of the solution for a coming 'crisis' in health care services. This paper analyses experiences with introducing welfare technology in small municipalities in the region of Sogn and Fjordane. The empirical material is based on nine interviews with project groups and health care leaders in municipalities working with welfare technology. While many of the national advice and recommendations about assistive technology are good guidelines, the findings suggest that certain challenges are increased by the small size of the municipalities. This points to the importance of recognising different needs created by a variation among municipalities.

Keywords

Welfare technology, Assistive technology, Municipality health care services

1   INTRODUCTION

There is a widespread agreement that we will need to deliver health care services in new ways in the future due to an increasing gap between a growing population in need of health care services and the number of 'warm hands' working within municipal health care. It is projected by Statistics Norway that the 'care burden' in Norway will double within the next 25 years. A lack of resources for supporting institutional care means that more people will have to be supported in their own homes. The Norwegian report Innovation in Care (NOU 2011:11) suggests that assistive technology, or 'welfare technology' which it is often called in Scandinavia, will help to make more people able to remain and live safely in their own home until an older age. At the same time, welfare technology will increase quality of health care services for users and relatives and, according to the report (NOU 2011:11), it will reduce or postpone the need for institution based care. Welfare technology is further defined in the report as technological assistance that contribute to increased safety, social participation and mobility, as well as physical and cultural activity. It enables the individual to manage everyday life despite of sickness, old age or mental and/or physical disability.

The goal is that technology will provide an early warning about accidents or unwanted episodes. This can increase quality of care, as well as save time for health care personnel. Seen from the perspective of the users or relatives, such technology might increase personal freedom. For instance, using a GPS or a digital system for localising a person can have significant positive effects for persons with a cognitive disability that like to go for a walk. With a GPS relatives or health care personnel can be notified and the wandering user can be found if she cannot find her way back on her own (Øderud, 2015). We will not go into the discussion of whether 'cold technology' or 'warm hands' are better for health care services or the users. However, we recognize that there is a strong political pressure for municipalities to introduce welfare technology in Norway (Melting, 2017; Melting, 2015; Helsedirektoratet, 2012). Similar trends concerning assistive technology in health care services can be seen in many western countries. Although this invites to exchange of knowledge and experiences across national borders, some challenges in this work are national. In Norway, there is a national programme for welfare technology run by the Norwegian Directorate for Health in collaboration with the Norwegian Association of Local and Regional Authorities (KS), providing advice and guidelines for introducing welfare technology in municipalities' health care services. In this paper, we analyse and discuss experiences from a project aiming to implement welfare technology in a selection of municipalities in the rural region of Sogn and Fjordane.

The municipalities in the region Sogn and Fjordane are mainly small regarding population, but with relatively large areas and long distances. The geography is challenging and many of the municipalities have scarce financial as well as human resources. As we will show in the analysis, some of the challenges that the municipalities meet can be found also in other regions. However, some of our findings suggest that the size of the municipalities also produce some of their challenges – some of which have not been thoroughly investigated and clarified by the national programme.

1.1 Welfare technology in municipalities in Sogn and Fjordane

This study analyses experiences from the project Welfare Technology in the Municipalities in Sogn and Fjordane,

which started in 2014. The project has since then been run by a cross-sectoral working group, including several municipalities, county council, representatives from research and education and regional health authorities. The County Governor funded the project with 50%, while the municipalities have provided the remaining 50%.

In 2014, none of the 26 municipalities in the region had started implementing welfare technology. Consequently, the first phase of this project focused on inviting all municipalities to participate and encouraged them to start the process of placing welfare technology on their agenda.

The second phase of the project was running through 2015. At that time, the Norwegian Directorate for Health had set a dead-line for implementing welfare technology in municipal health services by 2018 and there was apparently no time to lose. This deadline has later been postponed several times. Project phase 2 focused on establishing practical experience and knowledge by testing specific welfare technological solutions in pilot municipalities. This included safety systems for sheltered housing and private homes, with various sensors and alarms that warn health care services or relatives when unforeseen and unwanted events happen. Such unwanted events could be a person falling (fall-detection technology), leaving her home (GPS or motion-detection sensors) or leaving bed at night without returning (sensor in bed). Other technological solutions that were tested included digital medicine dispensers that reminds the user with an alarm when it is time for her medicine. Also, if the medicine is not taken, an alarm can warn relatives or health care personnel. One municipality introduced activity technology in their pilot, represented by an exercise bike coupled with a video showing recordings from local village roads to increase motivation for indoor exercise.

At the time of the third project phase, in 2016, the national welfare technology programme had started to publish results and nationwide advice for municipalities. Thus, when the pilots continued, national advice was more directly involved through the introduction of a framework, created by the national programme, for realising cost and quality benefits from using technology. The pilot municipalities continued their activities while receiving training in this cost and quality benefit tool. The municipalities were then encouraged to use this method in their own work, and the work was evaluated through interviews five months later.

The aim of the regional project was not only to gain experience in single municipalities. The experiences and knowledge gathered through these pilots would become the basis of advice for municipalities in the region and simultaneously create local and regional spearhead municipalities. The technological solutions that were piloted were not new technology, but they were unfamiliar to the municipalities of this region. Many other projects across Norway, as well as other countries, have documented positive effects of such technologies

(Melting, 2017; Melting, 2015). The aim of this article is however not to evaluate the technology, but to analyse the processes of introducing technology within the municipalities.

2 LITERATURE

There are several studies analysing the challenges of implementation of welfare technology in Norwegian municipalities (Ørjasæter, 2016; Dugstad et al.,2015; Nordtug et al., 2015; Disch et al., 2015; Grut et al.,2013). These mostly focus on the effects of the technologies, as well as the experiences of health care workers regarding implementation. Dugstad et al. (2015) identify several barriers regarding implementation of welfare technology in various municipalities in eastern and southern Norway (Drugstad et al., 2015). Some of these are presented as universal challenges, that probably could be found in most municipalities. Examples of such barriers are knowledge of technology in general as well as the specific welfare technological solutions and communication between technologists and health professionals.

Nordtug et.al (2015) studies three districts in mid-Norway implementing sensor technology in their health care services. They found high motivation among the health professionals, as well as a need for extra resources to focus on cross-sectional cooperation. Grut et al. (2013) found that 'to be successful, the adoption of welfare technology needs to be anchored at several different levels within the municipal organization' and that communication between all parties is crucial in such processes.

One of the early welfare technology projects concluded that welfare technology could be perceived as a threat to the existing corporate culture, structures and values of municipal health care (Det Midtnorske velferdsteknologiprosjektet 2014). This project also provided a list of advice for municipalities that were interested in welfare technology, which became part of the inspiration for the work in the region of Sogn and Fjordane.

Small municipalities in somewhat rural areas are included in some of the studies mentioned above. However, none have cases from the region of Sogn and Fjordane, and none are identifying specific challenges connected to size of the municipality. In this article, we will point to experiences from Sogn and Fjordane that suggest that also size of municipalities is important in the process of implementing welfare technology.

3 METHODS AND THEORETICAL FRAME

The empirical material includes a total of nine interviews with welfare technology project groups or representatives from different municipalities' health care services in the region. Eight of the interviews were with single municipalities, while one was a group conversation with several municipalities. The interviews lasted

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between 30 and 90 minutes, and had between one and nine participants. These were mainly the leader of health care services in the municipality and people from the project group, often including middle leaders with responsibility for home care services. Other participants present in one or two interviews, were representatives of IT services, representatives of user organisations and, in one case, a politician. The interviews were completed during 2016 and 2017.

The researchers responsible for the interviews were part of the cross-sectoral working group that met and discussed the local projects several times in the project period. The researchers were not involved in the municipalities' local project groups. At the end of phase 2 and phase 3 the researchers visited the municipalities or met the project groups in video meetings, to interview them about their experiences in the work of introducing welfare technological solutions as well as their experience with using the cost and quality benefit tool.

Two different interview guides were used, both designed to evaluate the process of implementing welfare technology, however one also focusing on the cost benefit tool. The interview guides built on findings from similar analysis in other projects in Norwegian municipalities, thus aiming to capture experiences related to aspects that had been found important in other projects. The interview guides also reflected the theoretical framework from technology studies, seeing technology not only as a physical object, but also including knowledge, skills, symbols and routines. The theory of domestication emphasises that when technology is implemented in a new context, this context already has its own routines, norms and values that the new technology has to adjust to, simultaneously as introduction of new technology changes the context (Silverstone et al., 1997). Thus, technology has an 'interpretative flexibility' for different user groups (Bijker et al., 1993). Our aim was to explore how the process of implementing welfare technology was perceived and experienced by those who were close to this process in the municipalities, while recognising the complexity and negotiations going on in such processes.

We were two researchers present during the interviews, with one asking questions and the other in charge of making extensive interview notes to capture the dialogues in the interviews. The extensive notes were later analysed with Grounded Theory Method, meaning that we coded the text to discover patterns in the material (Charmaz, 2006).

Below we will go through some of the experiences that stand out as particularly noteworthy for the municipalities we interviewed in this region.

4   RESULTS

4.1 Abundance of will and lack of knowledge

We found that introducing welfare technology was welcomed both by political and administrative leadership in the municipalities that acted as pilots in the project. This was not surprising. In fact, they had been recruited as pilots exactly because they had already put technology on the agenda, making them ready, or nearly ready, to implement technological solutions. Simultaneously as we found political will to support welfare technology initiatives, we also found an equally large lack of knowledge about the same. In one of the municipalities, the message from politicians was that they supported welfare technology regardless of what kind. In another municipality, acquiring and installing welfare technology had been part of a public procurement in which the technology was not specified, thus placing the choice of technology outside the health care department of the municipality. For a third municipality, a political decision to close shielded housing for persons with dementia was followed by a requirement that technology should solve the situation, with no further specification.

The political will was not only accompanied by a lack of knowledge, but also a lack of practical support. To one of the project groups, it felt as if the support from politicians and administration was 'almost too big' – they were 'cheered on', but did not receive adequate resources, time or funding to see projects through. This caused frustration among those who had been appointed as responsible for driving the local project forward. It was difficult for them to achieve their goals and they had to do project work, like preparing reports, in their leisure time.

4.2 Project leadership and project groups

All the municipalities in this study had established a clear project leadership – in most of them this was the head of health care services, occasionally delegated to middle leaders. They had also established project groups, although it had been a challenge for some of the municipalities to find participants for the project, thus the size of the project group varied between municipalities. Project leaders together with project groups were the vital driving forces in the work of implementing welfare technology in all the municipalities.

One of the largest challenges that the project leaders reported, was the new competence requirements they met when starting to work with welfare technology. Most of these leaders had a professional background in health care, thus, technology represented a new competence for them: 'Now I have to learn things I shouldn't really know', one of them said. Another project leader explained how she had to act as a 'Jack of all trades', doing things she 'does not know', and when people asked, she could not give satisfying answers.

Another challenge for leaders and the project groups was to build motivation among other employees. Motivating health care workers to start handling new technology was not a simple task. Only one of the municipalities had reserved time for involving employees. In the other municipalities, the new tasks had to be integrated in an

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already fully packed work day schedule, making the smallest challenges difficult to overcome.

We found that in some of the municipalities with a leader-driven process, the employees were not involved from the start of the project. The result was a weak motivation and a lack of 'ownership' among the employees. This in turn made the leaders even more important to keep the project going. Thus, increasing the leader-driven character of the project, in one municipality even resulting in the technology not being used according to the plan.

4.3 Technology competence

Challenges to put together a project group was partly referred to as a lack of people, and partly as a lack of the right people. Lack of people referred to the size of the municipalities: being small also meant few hands to share the work. The lack of right people had to do with the new competence required to deal with technology. We saw that even technology that is apparently simple to handle requires basic technological competence, such as plugging the right cable into the right socket. Lack of technology competence among employees who were responsible for the daily contact with the technology was a challenge in several municipalities. Some of them claimed that employees were hesitant or did not feel safe being introduced to new technology. Rhetorically, the challenge of finding health care personnel with a satisfactory ability to handle technology was several times referred to as a challenge tied to gender and age, and in some municipalities they left the handling of technology to the younger personnel. Some also suggested that scepticism towards new technology had to do with gender: the 'woman syndrome', or the 'what if everything goes wrong syndrome'.

This lack of technology competence among health care professionals was further complicated in some of the municipalities that also had a lack of general technological competence in the municipalities – a lack of IT people. This was a result of inter-municipal companies and agreements about collaboration around ICT support for the small municipalities in the region. In addition, several of the municipalities emphasised that they needed a person who could 'translate' between health care and technology: a 'healthcare-ICT person' who knew enough about technology but at the same time understood the needs within health care services.

4.4 Finding technology for users, or users for technology

Other studies have found that municipalities have had different pathways into their work with welfare technology, from starting with a technology, a user need, or a service in need of innovation (Grut et al., 2013). A similar variation is found among municipalities in Sogn and Fjordane. One municipality was approached by a producer; one was forced to solve a user need; one chose a technological solution that one of the involved health care personnel had learnt about it; and finally, one municipality had left the choice of technology to the entrepreneur building their health care institution and new sheltered homes.

What all these cases have in common is the difficulties in establishing sufficient knowledge about different technological solutions due to limited personnel resources and limited technological competence among the health care leaders. We saw that one result of this was reluctance to make any choices, but rather to wait for more concrete advice from health authorities. This way the municipalities would not have to do all the explorative groundwork themselves. Another result we found, was a tendency to feel 'stuck with' the technological solutions they had already chosen, or to the technology that appeared to be within reach of their practical and economical resources. Thus, when a municipality already had acquired a technological artefact, their next challenge was to find a user for that technology, turning the health care authorities' advice to 'start with the users' upside down.

4.5 When size is a challenge

The municipalities did not only experience challenges in establishing adequate knowledge about the technological landscape, but also about the technological solutions they had chosen. One municipality experienced this when testing digital medicine dispensers. The dispensers notified the user when it was time to take their medicine, and could send a text message to relatives or health care services if the user did not respond to this notification. However, they soon discovered that the digital platform that sends messages from the dispenser required a larger number of dispensers in use than the two this municipality had acquired.

The small-scale operations represented a challenge for the municipalities also in another way. Having a limited set of technological artefacts or solutions in use, also meant that it took longer time to build experience among employees responsible for using the technology, particularly when this was not part of their everyday routine. Lack of knowledge about how to operate the technological solutions could result in the technology not being used: 'Standing there and fumbling with something technical that we can't make work is difficult – then we'd rather do it the old way', one of the home care workers explained.

Although most of these technology solutions are not new, it is still a challenge to make different technological systems communicate with each other. Three different digital health care systems are in use in the municipalities, and some of the welfare technology solutions communicate with one of these, but rarely with all. The pilot municipalities saw themselves as 'too small' to negotiate with the producers to make them develop the technology to fit the municipality's needs. The municipalities found it particularly frustrating when it appeared that technological solutions recommended by the national programme were not fully developed and ready to be implemented, like one of them illustrated by saying:

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'it represents large costs for a small municipality budget and it's perceived as a risk with municipal money when the solution that is recommended is not properly tested or communicating with established professional programs. We are not certain that these really are the future of good solutions.'

4.6 Identifying benefits from using technology

The pilot municipalities did not only test technology, they were also invited to a course to learn and later test a cost and quality benefit tool developed by the national programme. At the course, large sheets of paper with tables to fill in were presented for the participants. Some wrote directly on the paper, others used post-it notes. They started with the user's needs and explored how these could be (better) met with technological solutions, and further, which changes that had to be made to achieve the identified benefits.

The municipalities agreed that this was a good method. They suggested that it increases consciousness of the pre- and post-technology scenarios, making it possible to see benefits. Thus, they saw this as a tool for documenting progress for politicians and to demonstrate for sceptical colleagues that using technology could benefit users by increasing service quality as well.

However, we also found a unanimous agreement that the tool was too complex for their needs and resources, and none of the municipalities used the method in a systematic way. 'It is too cumbersome with all those sheets of paper. That was a bit deterrent', representatives from one municipality explained. In one of the other municipalities they were planning to use the method, however they also perceived it as too complex and time consuming compared to the size of their welfare technology project. Using a complex method like that is probably fine in large projects involving large sums of money and many users, they suggested. However, they could not justify using the same complex method involving many employees for their limited use of technology for a handful of users. Only one of the municipalities we interviewed claimed to use the method, however, they had also adjusted it and simplified the tool to the resources and competences found within the municipality. On the other side of the scale we found that one of the municipalities had more or less given up their welfare technology project, explained by the insecurity it represented for them as a small municipality with limited resources, to invest in technology that was still not fully developed and adjusted for the municipalities' needs. A better strategy for a small municipality would be to wait, they suggested, and let the larger municipalities do the work with adjusting and adaptation of welfare technology.

5   DISCUSSION

Summarizing the findings, we saw a high level of will (or wish) to use technology, but also a lack of knowledge and a lack of practical support in the pilot municipalities resulting in limited funding and personnel resources. We saw leader-driven processes, with a lack of technology competence resulting in health care leaders doing things they 'shouldn't really know', further complicated by IT personnel posted in inter-municipal ICT companies rather than in the municipality organisation.

The importance of getting these factors right have been pointed out in other projects (Dugstad et al., 2015; Disch and Johnsen, 2015; Grut et al., 2013; Det Midtnorske velferdsteknologiprosjektet, 2014). A good project structure, dedicated time, funding, a combination of health care and technology competence etc., are as important for large as for small municipalities. However, our findings suggest that, firstly, the effects of these challenges are sometimes escalated in small municipalities – the extreme version seen in one municipality that decided to put on hold all their activity with welfare technology. Secondly, finding solutions are also complicated by size, like the challenge of including personnel with technology competence in a small municipality that relies on the inter-municipal collaboration rather than internal IT personnel. While other projects have reported on challenges of communication between technologists and health care personnel (Dugstad et al., 2015) the challenge in this case was rather a lack of technologists to communicate with in the first place.

Even though the municipalities operated in small scales and experiences with technology were limited in these projects, the new experiences increased their knowledge about technology, and more importantly, also their attitude towards technology. The municipalities expressed an increased will to use technology and all pilot municipalities engaged in discussions of how to further develop this. 'Don't test, just start', was the advice given by the health care authorities when they visited one of the regional conferences about welfare technology in Sogn and Fjordane. Our findings do however suggest that small-scale testing and trying out technological solutions, including the organisational aspects, in their own speed and scope, was important for the small municipalities. Even though the technology itself is not new anymore, it is still not a natural part of the general competence in the municipality-based health care sector. Like findings in other municipalities (Moe and Nilsen, 2015) also in this region we found staff that were reluctant or sceptical of including technology as a part of the health care solution. However, staff with the ability to use the technological solutions that are being introduced is crucial to achieve benefits from the technology. The challenges of technology competence seem to be more critical in smaller municipalities due to the reasons mentioned above, where access to technology competence appears to be one of the weakest points for some of the small pilot municipalities. This suggests the importance of small-scale pilot activity, as that provided them with a possibility to establish experience and to build knowledge that they need in the further process of implementing welfare technology.

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Other challenges related to municipality size are found in the technology. Some of the technological solutions on the market require operations on a larger scale than the small municipalities in this region needed. Learning from larger municipalities (Bjørkquist, 2015) as well as advice from the national welfare technology programme (Melting, 2015; Melting, 2017) had not prepared them for their small-scale operation being a problem.

The small municipalities with limited resources also appeared to react negatively to what they perceived as technological solutions that were not ready for implementation, in particular when 'authorised' through advice from the national programme for welfare technology (Melting, 2015; Melting, 2017). Investing in technology that is not the 'right' solution represents a high risk for them. A recurring question from the health care managers was: 'How can we know that the technology we choose and spend our financial resources on, are not outdated in a year or two?'

The advice and tools coming out of the national programme are indeed important resources for municipalities in their work with welfare technology. Many of the challenges we found appear to reflect municipality size. However, the national programme has not fully recognised that the prerequisites for introducing welfare technology in the health care services in small and rural municipalities might be different from the prerequisites in larger city-based units. Municipalities in Sogn and Fjordane are motivated to work with welfare technology, but they also need to scale and organise the work to fit within their own limited resources and abilities.

6   CONCLUSION

Our study illustrates that size matters for the municipalities' experiences, attitudes and possibilities in the first phase of implementing welfare technology. On the negative side, the most critical factor appears to be lack of technology competence, not only among health care workers, but in general in the municipalities. A recurring theme in the Norwegian discourse is the complexity of welfare technology and the need to focus on human factors rather than the technological object (NOU 2011:11; Helsedirektoratet, 2012; Corneliussen and Dyb, 2017). There is no doubt that implementing welfare technology involves many other aspects than the physical artefact itself. Still, the pilot municipalities illustrate that the technology itself creates prerequisites and challenges that cannot be measured in percentages. Although not knowing which cable to connect is perhaps not the most intricate challenge to solve, such small issues can also prevent the use of technology in practice. On the positive side, however, being small is not only a disadvantage. The small municipalities have a rather large degree of flexibility when they can work at their own speed and within the scope that is achievable within their limited resources.

Although we should not generalise from the interviews in this project, they illustrate that municipalities are different and have different access to economic resources, as well as people with necessary motivation and competences. Some of these differences are not trivial, and size appears to be one factor that needs to be recognized as making a difference in municipalities' efforts to implement welfare technology. More research is needed in this field, to learn more about the situation, and to produce advice about implementation of welfare technology that can reflect the differences between municipalities.

7   ACKNOWLEDGMENTS

8   REFERENCES

[1]   NOU 2011:11, Innovasjon i omsorg.

[2]   Øderud, T., Grut, L. and Aketun, S. 2015, Samspill – GPS i Oslo - Pilotering av Trygghetspakke 3.

[3]   Melting, J. B. 2017, *Andre gevinstrealiseringsrapport med anbefalinger.* Nasjonalt velferdstekno-logiprogram, Helsedirektoratet.

[4]   Melting, J. B. and Frantzen, L. 2015, *Første gevinst-realiseringsrapport med anbefalinger.* Nasjonalt velferdsteknologiprogram, Helsedirektoratet.

[5]   Helsedirektoratet 2012, Velferdsteknologi. Fagrap-port om implementering av velferdsteknologi i de kommunale helse- og omsorgstjenestene 2013-2030.

[6]   Ørjasæter, N.-O. and Kistorp, K. M. 2016, Velferds-teknologi i Sentrum: Innføring av velferdsteknologi i sentrumsbydelene i Oslo - En kartlegging av effekten.

[7]   Dugstad, J., Nilsen, E. R., Gullslett, M. K., Eide, T. and Eide, H. 2015, Implementering av velferdsteknologi i helse-og omsorgstjenester: opplæringsbehov og utforming av nye tjenester–en sluttrapport.

[8]   Nordtug, B., Aasan, H. M. and Myren, G. E. S. 2015, Implementering av velferdsteknologi. En kvalitativ studie: hvilken nytte og hvilke utfordringer erfarer ansatte i kommunal helsetjeneste? Senter for omsorgsforskning, rapportserie – nr. 1/2015.

[9]   Disch, P. G. and Johnsen, H. 2015, Prioritering og kompetanse i bruk av velferdsteknologi i kommunene i Telemark, Vestfold og Buskerud. Senter for omsorgs-forskning Sør/Høgskolen i Telemark.

[10] Grut, L., Reitan, J., Hem, K.-G., Ausen, D., Bøthun, S., Hagen, K., Svagård, I. S. and Vabø, M. 2013, *Veikart for innovasjon av velferdsteknologi.* Rapport: SINTEF, NOVA & KS.

15th Scandinavian Conference on Health Informatics SHI2017, Kristiansand, Norway, 29 - 30 August.

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[11] Det Midtnorske velferdsteknologiprosjektet 2014, Sluttrapport.

[12] Silverstone, R., Hirsch, E. and Morley, D. (1997 (1992)). Information and communication technologies and the moral economy of the household. In R. Silverstone and E. Hirsch, eds., *Consuming Technologies: Media and Information in Domestic Spaces.* London and New York: Routledge. 15-31.

[13] Bijker, W. E., Huges, T. P. and Pinch, T., eds., (1993 (1987)). *The Social Construction of Technological Systems.* Cambridge, Mass.: The MIT Press.

[14] Charmaz, K. 2006, Constructing grounded theory: A practical guide through qualitative research. *Sage Publications Ltd, London*.

[15] Moe, C. E. and Nilsen, G. S. 2015, Velferdsteknologi, til glede eller besvær? *Norsk konferanse for organisasjoners bruk av IT.* Vol. 23.

[16] Bjørkquist, C. 2015, Erfaringer fra pilotering av velferdsteknologi i Sarpsborg kommune: Mobil trygg-hetsalarm, digital medisindispenser og KOLS-moni-torering. Høgskolen i Østfold: Rapport 2015:4.

[17] Corneliussen, H. G. and Dyb, K. 2017, Om teknologien som ikke fikk være teknologi – diskurser om velferdsteknologi. In J. R. Andersen, E. Bjørhusdal, J. G. Nesse and T. Årethun, eds., *Immateriell kapital. Fjordantologien 2017.* Universitetsforlaget. 165-181.

15th Scandinavian Conference on Health Informatics SHI2017, Kristiansand, Norway, 29 - 30 August.

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