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Abstract

The Nordic countries share common interests to digitize services in the health care sector from which their eHealth strategies are a proof of. Sweden has specifically put effort on the global scheme by setting a goal of being the best in eHealth by 2025. As one of the main goals of the strategies is increasing patient empowerment, perspective of the health care professionals in this digital shift has yet remained less noticed and the concrete effects on them is still scarcely studied. This study focuses on providing the aspect of the health care professionals and how they have perceived and experienced the digital tools and eHealth services affecting their work and what attitudes they themselves have as users.

This study utilized the mixed method approach and was done in collaboration with the Digga Halland project which aims towards enhancing health care workers' digital competences and conditions to utilize eHealth. Previously collected baseline survey data from health care professionals in different municipalities in the Halland region was analysed and five health care professionals were recruited for in-depth, phenomenological interviews.

The results of this research indicate that the use of digital tools and services is common among health care professionals at work and outside work and the workers consider their digital competence rather good. However, the interview respondents presented varying attitudes towards digital services and eHealth depending on whether the services were evaluated from a professional role or outside work role when the professionals used the services themselves. Also, the current professional position guided whether the digital shift and eHealth were experienced more positively or negatively.

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1. Introduction

Since the early 2000s, digitalisation of services in various fields has been a continuously growing trend due to rapidly developing technical possibilities. In recent years, digitalisation and technological innovations have been of interest particularly in the health care sector with pursuits of developing sustainable solutions to provide equal, accessible and cost-effective high-quality services for the population with the increasing aging population as a specific challenge. Only in the Nordic countries, innovative solutions are continuously developed to expand the possibilities of what eHealth can offer and online doctor consultations are becoming increasingly mundane for the Nordic people. Embracing digitalisation and eHealth services in the Nordic countries is not surprising since the population is more active in Internet use compared to EU average and Nordic citizens are significantly more active in seeking health related information and booking appointments through Internet compared to the population in the EU level. (Rehn-Mendoza & Weber, 2018, 180) High Next Generation Access (NGA) coverage and digitisation of public services can also be thanked for in the Nordic region. Inclusive digitalisation has been of interest in the Nordic countries with considerable investments and efforts to improve ICT infrastructure. Geographical variations and population concentration to larger urban areas have left broad, sparsely populated rural areas in the Nordic region and digitalisation has been thought to offer improvements in accessibility to health care services and reduce social and spatial inequalities. Digitisation of public services is considered to provide better and more efficient services. This can be measured by studying the amount of submitted online forms to public authorities over the Internet. As mentioned, the Nordic countries are ahead in digitizing public services compared to EU28 average. However, Sweden presents low figures compared to the Nordic context. The explanations have been searched from the level of municipalities, that have faced challenges in providing digital public services due to capability deficits. Furthermore, online forms filled via Internet seem to be replaced by mobile applications. (Johnsen, Grunfelder, Møller & Rinne, 2018, 160-161, 166-167; Rehn-Mendoza & Weber, 2018, 178).

According to an OECD report, Sweden is one of the leading countries in the diffusion and use of digital technologies and compared to the other OECD countries, individual, business and governmental use of digital technologies is among the highest (OECD, 2018, 13-14). No wonder Sweden has set a goal of being the best of all countries in the world in

utilising the digitisation opportunities of eHealth by 2025 to provide citizens easier access to good and equal health and welfare and to enforce citizens' own resources to participate in societal activities and stay independent (Ministry of Health and Social Affairs & Swedish Association of Local Authorities and Regions, 2016, 9). The core idea of the national eHealth strategy in Sweden aims to create concrete benefits for all stakeholders; the individual, healthcare and social services professionals and decision-makers in healthcare and social services (Erlingsdóttir & Lindholm, 2016, 9).

Adoption and implementation of eHealth interventions relies heavily on health care professionals (Henneman, Beutel & Zwerenz, 2017, 281) and as discussion has revolved around the importance of keeping the patient in focus in health care services, my interest to study the health care professionals' perspective emerged. The issues I found interesting embarked from the questions of how the role of a 'mediator' of attitude formation is perceived among the health care professionals, how digital services are accepted among the professionals and what attitudes are connected to the usage of eHealth services at work. Health care professionals have the responsibility to provide best possible care to patients within their knowledge according to certain guidelines and digitalisation is slowly changing the responsibilities and patient-professional relationship. This paradigm shift or the standpoint of the health care professionals but also the impact on the health care staff have not been researched in depth yet (Scandurra, Jansson, Forsberg-Fransson & Ålander, 2015, 968). This thesis aims towards giving insight to how eHealth services are accepted and adopted by the health care professionals.

2. Background

2.1 Definitions of eHealth

The specific definition of 'eHealth' or 'electronic health' is widely discussed without a clear, coherent consensus when studying the concept of eHealth and what the definition entails. In 2005, a systematic review by Oh, Rizo, Enkin & Jadad was released of the published definitions where it was concluded that the 51 unique definitions included in the study had no explicit consensus of the meaning of eHealth. However, all definitions included three different concepts with varying emphasis; health, technology and commerce. The

definitions not only regarded technology as a tool to enable a process or service but also as an epitome of eHealth itself. The wide range of definitions can reflect the diverse contexts in which eHealth is used and give understanding to the whole concept. According to several sources, Eysenbach (2001) has been cited the most when defining eHealth:

> *eHealth is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology.*
>
> (Eysenbach, 2001; Shaw, McGregor, Brunner, Keep, Janssen & Barnet, 2017; Oh et al., 2005).

A literature review based mainly in the research by Oh et al. (2005) questioned the coherence of all the definitions and overall boundaries of what is considered as eHealth. Showell and Nøhr (2012) state that terms such as telehealth, social media sites, Internet based health marketing and patient and staff education have not been consistently included in eHealth which might lead to dissonance when attempting to evaluate or compare eHealth initiatives. However, European Commission and The World Health Organisation (WHO) have contributed to the definition including mobile health (mHealth), health information technology (IT), wearable devices, telehealth and medicine, health portals and personalized medicine to be part of eHealth (European Commission 2004, 4; WHO, 2012, 78-80). Shortly, WHO (2012, 1) defines eHealth to be the use of information and communication technologies (ICT) for health. From a broader perspective, eHealth aims towards improving the flow of information, through electronic means, to support the delivery of health services and the management of health systems. European Commission (2019) adds to this definition with stating that digital health aims to improve prevention, diagnosis, treatment, monitoring and management of health and lifestyle. The definition by the Swedish National Board of Health and Welfare, described in eHälsömyndigheten.se (2016), focuses on explaining eHealth by first determining what health is. Shortly, their explanation defines health to include physical, mental and social aspects of well-being. From that definition, they continue that *eHealth constitutes of using digital tools and digital sharing of information to achieve and maintain good level of health*. The Swedish eHealth agency also states specific examples of e-health such as e-prescriptions, e-services (appointment booking online), virtual appointments, IT

support in health and social care, health applications and medical equipment. For this study, the eHealth definition by the Swedish National Board of Health and Welfare has been used.

2.2 eHealth globally

ICT is constantly changing how health care services are delivered and how health care systems are run, from a local to the national level but efforts have been also made on global and supranational levels to formulate strategies for the development of eHealth services (WHO, 2012, 2; Erlingsdóttir & Lindholm, 2016, 8). Therefore, collaboration between private and public sectors of health and ICT is vital. WHO and the International Telecommunication Union (ITU) as well as the major United Nations agencies for health and telecommunications have identified eHealth to be included in the governing body resolutions to develop national eHealth strategies. In addition to delivering national benefits, eHealth strategies can also improve regional cooperation as is demonstrated in the European Union countries which have with political momentum embraced eHealth for the benefit of citizens and health systems. (WHO, 2012, 1-2). The European Union member states have shown commitment in adopting eHealth and transit towards a "European eHealth Area" framework where a favourable climate of integrated policies in the name of eHealth actions and synergies are initiated. The first eHealth strategy/action plan was set out in 2004, forming a part in the European Union's *e*Europe strategy addressing common challenges, creating a framework to support eHealth, piloting actions to begin the delivery of eHealth, sharing best practises and measuring progress. (European Commission, 2004, 4-5, 15-16) Since then, targeted policy initiatives have been developed to foster adoption of eHealth in the whole EU area and a new Action Plan for 2012-2020 was released to address and remove barriers of deployment. The main visions of the new action plan are; 1) to improve management of chronic disease and multimorbidity, 2) to strengthen effective prevention and health promotion, 3) to increase sustainability and health systems efficiency through innovation, 4) to enhance patient-centric care and empowerment, 5) to encourage organisational changes, 6) to encourage cross-border healthcare and equity, and 7) to improve legal and market conditions for developing eHealth products and services. (European Commission, 2012, 3-6) It is inevitable that on the international agenda, eHealth is given high priority and it has been recognized as one of the strongest areas of growth in Europe (Ministry of Health and Social Affairs & Swedish Association of Local Authorities and Regions, 2016, 11).

2.3 eHealth policies and strategies in the Nordic countries

EU, WHO and the Nordic countries share the understanding of how important it is to put emphasis on eHealth benchmarking due to similar action plan goals between the countries. Nonetheless, the Nordic countries have placed themselves as leaders of eHealth implementation and develop common policy levels also on EU-level. All the Nordic countries have implemented eHealth in the systems and services which are working in most parts of the healthcare sector. When comparing the policies in the different Nordic countries, certain key strategical areas emerge. The main strategies in the newest eHealth policies focus on empowering and activating citizens, positioning eHealth services between the patient and the healthcare system and making services more integrated and available. In other words, a lot of focus has been put to allow the citizen to use a preferred channel from the services offered. Policies targeting health care professionals aim towards making systems more usable and building eHealth literacy (competences) to improve health care professionals' skills and easing the interaction with the systems. Reaping economic benefits is given more importance in the Finnish, Danish and Norwegian contexts, as a target highlighted mostly in the Swedish policy documents is improving health care services by building and implementing eHealth systems and services. (Hyppönen, Koch, Faxvaag, Gilstad, Nohr, Hardardottir, Andreassen, Bertelsen, Kangas, Reponen, Villumsen & Vimarlund, 2017, 9, 14–15)

When looking more closely the eHealth strategies in the Nordic countries, similar objectives and goals are visible. In Denmark, for the most recent strategy, "National Strategy for Digitalisation of the Danish Healthcare Sector 2013-2017; Making eHealth work", the Danish government, local government Denmark and Danish Regions continue to collaborate for digitalisation. The vision is stated as "making coherent, efficient and standardized solutions available to health professionals in their delivery of health care services to the public" and five focus areas have been outlined; 1) health care services delivered in new ways, 2) digital workflows and processes, 3) coherent patient pathways, 4) better use of data, and 5) governance which all include specific goals and initiatives. (WHO, 2016; The Danish Government, Local Government Denmark & Danish Regions, 2013) Norway has presented their newest strategy and action plan for eHealth for the years 2017-2022. The visions include presenting health in new ways, digitize processes, improve context in clinical pathways and develop smarter use of health data. (Vestli, 2018) Iceland has outlined its eHealth strategy from 2016 to 2020 with four main objectives; ensuring secure and seamless access for health

professionals to patient information whenever and wherever needed, ensuring secure and seamless electronic access for consumers to their own health information whenever and wherever needed, ensuring security and quality of health information within electronic health records and enhancing electronic health record data retrieval and information dissemination (Hardardottir & Ingason, 2016). Finland has released its most recent eHealth strategy in 2015 with a title "eHealth and eSocial strategy 2020". The main objective of the strategy is to support citizens' active role in maintaining their own well-being and support the renewal of the social welfare and health care sector by improving information management and increasing the provision of online services. Specific objectives entail citizens' and professionals' aspects and how the service systems and processes should be utilized. The citizens' aspect entails the usage of online services and producing data for not only their own use but also for the professionals. Also, citizens can reach reliable information on the quality and availability of services and well-being issues regardless of where one lives. For the professionals in social welfare and health care, access to information systems that support their work and its operating processes is available as well as the usage of electronic applications is possible. Availability of electronic solutions is increased for both the professionals and the patients, and the structures of information management is clarified. (The Ministry of Social Affairs and Health & Association of Finnish Local and Regional Authorities, 2015)

2.4 eHealth in Sweden

2.4.1 Actors, strategies and Vision eHealth 2025

In Sweden, the National Board of IT in Healthcare was established in 2005 and the following year, a national IT strategy for healthcare was published covering areas such as harmonising laws and regulations for extended use of IT, creating a common infrastructure and technological structure, allowing access to information across organisational borders and providing the possibility for easy access to information and services to citizens. The first strategy entailing the concept of eHealth was published in 2010 replacing the concept of IT in healthcare. INERA (The Centre for eHealth in interaction) and eHälsomyndigheten (The Swedish eHealth Agency) have important roles in implementing the national eHealth visions, strategies and action plans. INERA was founded in 2000 and it's owned by the Swedish county councils and regions. Governance is formed from politically appointed boards of two

politicians from each healthcare region in Sweden. INERA's main mission is to coordinate and provide civic services within eHealth that follow the guidelines of the national strategy. The main aspect INERA has presented is to include all stakeholders but also, they have set the requirements for eHealth to fulfil various purposes for each stakeholder. Different actors are considered in INERA's goals which include accessible healthcare, the opportunities for citizens to influence their lives and health in a safe matter and creating beneficial effects for healthcare professionals and policymakers. Areas of responsibility of INERA include being a facilitating factor in implementing patients' digital access to their medical records, creating databases for storing healthcare data, provide healthcare information for patients and citizens and generating regulations for different eHealth services. The responsibilities of eHälsomyndigheten, which was founded in 2014, include the development of the healthcare platform HealthForMe (Hälsa för mig) which will help citizens to control their own health information. The authority's tasks also contain to store and distribute electronic prescriptions, produce national statistics and assure the quality and development of infrastructure between healthcare stakeholders and organizations. (Erlingsdóttir & Lindholm, 2016, 8-11; eHälsomyndigheten.se, 2016)

INERA published the eHealth action plan for 2013-2018 with the core focus of increasing individuals' chances to participate in one's own healthcare and support individuals' involvement in one's own health. In the action plan, eHealth was described as a paradigm shift in health care, where comprehensive investments and changing established ways of thinking was required. Individuals, health care and service staff and decision-makers were identified the main target groups. One of the concrete goals in the eHealth strategy was to enable the availability of electronic health records to all patients around Sweden by 2017. (Erlingsdóttir & Lindholm, 2016, 9; Ministry of Health and Social Affairs & Swedish Association of Local Authorities and Regions, 2016, 10; Scandurra et al., 2015, 965) The most recent action plan in the Swedish context was established in 2016 as "Vision eHealth 2025" replacing the previous strategy from 2010. With this vision, Sweden aims towards being the best in the world at using eHealth and the opportunities offered by digitalisation by 2025. The citizen is put in the centre of the vision as the opportunities provided by eHealth are supposed to make it easier for people to achieve good health and welfare as well as to enable the development and strengthening of own resources to participate in the societal life and be independent. Sweden's strong IT sector, widely increased digitisation of businesses and the public sector and digitally mature citizens even in the global level are proclaimed to

give good prospects to the vision. Equality, gender, efficiency, accessibility, usability, digital participation and information security are announced to be the ground basis for the work on the vision. Private sector, non-profit entrepreneurs and the research community are also acknowledged and included in reaching the vision. In the new vision for 2025, special emphasis is put on individuals and health care service professionals with widening the area to include all aspects of social and health care. Digital solutions and welfare technology are presented as answers to accessibility issues. Health care professionals are to be equipped with supportive digital environments and presented the possibilities of new career paths as different types of services and needs arise. Simultaneously, decision-makers need to provide and create necessary conditions for the health care professionals to use the eHealth opportunities in day-to-day work. (Ministry of Health and Social Affairs & Swedish Association of Local Authorities and Regions, 2016)

2.5 Technology use in Nordic welfare policy and lifestyle improvement

Technological developments and innovations in the name of eHealth can be at best used to improve citizens' lifestyle by preventing noncommunicable diseases caused by lack of physical activity, poor diet, obesity and tobacco and alcohol use. On a global scale, noncommunicable diseases are responsible for 70% of all deaths. Noncommunicable diseases are also in the Nordic context the most common causes of death with connection to rapid urbanisation, unhealthy lifestyles and population ageing. (Afshin, Babalola, Mclean, Yu, Ma, Chen, Arabi & Mozaffarian, 2016; Rehn-Mendoza & Weber, 2018, 173-174) In the Nordic region, where the countries are based on a strong welfare model, welfare policy aims towards improving quality of life, especially for the elderly, by providing opportunities for healthier diets, social interaction, physical activity and the sense of being needed. Welfare technology is one current mean to provide high-quality social welfare; to maintain or increase activity, participation, security and independence by offering various technological solutions such as assistive aids, automated tools, security alarms and mobile applications. Most of all, the purpose of welfare technology is to reduce pressure on care and welfare. (Nordic Welfare Centre, 2019) Therefore, welfare technology, with its eHealth solutions and innovations, plays a significant role in sustaining good quality lifestyle, improving lifestyle and providing tools to prevent dependency and morbidity.

3. Previous research on eHealth

3.1 eHealth's benefits for health and lifestyle

Information and communication technologies are being utilized in health systems for example to facilitate disease monitoring and surveillance and to improve the timeliness and accuracy of public health reporting. In addition, eHealth can be the means to guarantee that the right person receives the right health information at the right place and time in a secure, electronic form. The electronic form optimizes the quality and efficiency of health care delivery, research, knowledge and education. (WHO, 2012, 2) Health care quality is determined for example by evaluating physical accessibility to health care services, i.e. location of health clinics and hospitals. eHealth services are viewed as not only diminishing these areal but also social inequalities of accessibility and making health care more efficient. To utilize eHealth services most beneficially from the accessibility aspect, it has been discussed that the services must function in close co-operation with "traditional", physical consultations to provide acute services in rural areas as well as acknowledging elderly citizens' adoption and interaction with digital solutions. (Rehn-Mendoza & Weber, 2018, 178, 180-181)

Studies point out several positive aspects of eHealth; eHealth technologies have been reported to be effective in improving health care processes and outcomes in diverse settings, electronic medical records have the potential to save documentation time and increase accuracy and organisational efficiency and electronic prescriptions reduce medical errors (Keasberry, Scott, Sullivan, Staib & Ashby, 2017, 646-647, 651). All in all, eHealth can deliver more patient-centred health care in a more targeted, effective and efficient way and help to reduce errors. Not only citizens, patients and health care professionals but also health organisations and public authorities can benefit from eHealth. (European Commission, 2012, 4) For the health care professionals specifically, eHealth in health care system should support professionals' work, expand their capacities and provide opportunities to add value (Borell, 2016, 36).

To increase patient involvement, eHealth services can be considered to provide patients more influence over their health situation and increase access by highlighting patient transparency and empowerment but also demand patients to take up a more active role and exercise initiative when it comes to their health issues (Erlingsdóttir & Sandberg, 2016, 4;

Flynn, Gregory, Makki & Gabbay, 2009, 589). Empowering citizens as well as health care professionals with providing high quality, reliable, accessible and affordable health information are drivers for eHealth (The World Health Organisation & International Telecommunication Union, 2012, 2).

3.2 Challenges of eHealth

As eHealth systems develop in a rapid pace and digitalisation has been announced to provide great possibilities and opportunities in social services and health care, certain challenges and concerns have arisen that need to be taken into consideration when discussing eHealth. To control and to understand the direction eHealth is developing, we need to address issues such as laws and regulations, trust, equality and vulnerability issues, technological security and patient integrity, ethics, digital divide and work environment of the health professionals (Erlingsdóttir & Sandberg, 2016, 4). European commission has listed factors such as lack of awareness of eHealth solutions among patients, citizens and health care professionals, lack of confidence in eHealth solutions among patients, citizens and healthcare professionals, limited evidence of cost-effectiveness of eHealth tools and services, regional differences in accessing ICT services, lack of interoperability between eHealth solutions and lack of clear legal frameworks for mobile applications to be current challenges (European Commission, 2012, 5). Due to increasing usage of in-home self-test and diagnostics, a possible concern of the development of an uncontrolled, reinvented healthcare outside the "traditional" healthcare in Sweden has been stated and, in that situation, one could be worried about citizens' equal access to healthcare (Stridh, 2016, 63-64). Patients' privacy and safety as well as increased workload for the health care professionals have also been some concerns among health care professionals (Scandurra et al., 2015, 965). Implementing eHealth services to health care professionals' day-to-day work was reported to be an additional workload to the existing work tasks which resulted in considering digital services to be a burden among the health care professionals. Even though the positive sides and benefits of eHealth services were acknowledged among the staff, time constraints, extra tasks, increased stress, busy working hours and other organisational challenges but also deep-routed working habits were thought to be obstacles. Incentives for the implementation of eHealth into health care professionals' work in the individual and organisational level could increase the adoption and use of technology. Otherwise, work is prioritized according to clinic income and job

performance criteria. (Das et al., 2015; Borell, 2016, 40; Hanberger, Ludvigsson & Nordfeldt, 2013) Management of patients with complex multimorbidity issues and customizing eHealth applications according to patient-centred care have also been discussed to be challenges and on-going areas of improvement in eHealth (Keasberry et al., 2017, 647).

3.3 Health care professionals' eHealth competences

The concept of digital competence has been defined by the European Commission as one being able to use Information Society Technology (IST) confidently and critically for work, leisure and communication. It is supported by basic skills in information technology to retrieve, assess, store, produce, present and exchange information, to communicate and participate in collaborative networks via Internet. (European Commission, 2016 in Konttila, Siira, Kyngäs, Lahtinen, Elo, Kääriäinen, Kaakinen, Oikarinen, Yamakawa, Fukui, Utsumi, Higami, Higuchi & Mikkonen, 2019, 746) As increasing health care professionals' competences for using eHealth services and tools is one of the main policy targets in the Nordic countries, some aspects to consider with digitalisation are how eHealth changes health care professionals' work and what is the level of competence and skills among health care professionals to support patient self-management with eHealth. Kujala, Rajalahti, Heponiemi and Hilama (2018) evaluated and identified health care professionals' eHealth competence levels in public health organisation in Finland. In their study they refer to Sihvo, Jauhiainen and Ikonen (2014) who have determined seven core categories of eHealth competence by conducting expert focus group interviews. The categories are the following;

1) ICT skills,
2) Interactive e-communication,
3) Work development skills,
4) Positive attitude toward using eHealth,
5) Knowledge of eHealth services and their use in patient work,
6) Service development and implementation skills,
7) Multichannel health coaching and instruction skills.

(Sihvo et al. 2014 in Kujala et al. 2018, 182).

Konttila et al., (2019) also identified key eHealth competence areas in their systematic review of healthcare professionals' competence in digitalisation. The areas were defined as;

1) Sufficiency of knowledge and skills in the use of digital technology to be able to provide ethical and high-quality care for patients,
2) Social and communication skills healthcare professionals possess in having the competence to apply digital technology into health prevention, diagnoses and treatment,
3) Motivation and willingness of health care professionals to integrate digitalisation at work,
4) Collegial and organisational support for building positive experiences in digitalisation.

(Konttila et al. 2019, 758)

The findings from the study by Kujala et al. show that the health care professionals in a multidisciplinary environment consider their digital competences (basic computer use) quite good. However, when considering eHealth, the health care professionals' evaluation of their own competences to motivate and advise patients to use eHealth services and the means to communicate with patients through eHealth solutions were low which might be the cause of unclarity of the role of the professional to engage patients to use eHealth services. At the same time, it has been discussed that since eHealth services are increasing rapidly, health care professionals are not familiar with all the digital possibilities and hence not competent enough to promote the eHealth systems to patients. Therefore, eHealth competences do not only consider individual skills but also the organisations' demands to develop new working processes and stay up to date in the development of eHealth services. (Kujala et al., 2018, 181, 184) Konttila et al. (2019, 756-757) also highlighted the significance of organisational factors in predicting health care professionals' digital competence. Other factors that influence strongly on competence in digitalisation are psychosocial factors, strong professional knowledge and skills and specific attitudes that are the result of experiences. Health care professionals' clinical skills and competences must be generally identified to ensure provision of correct information to patients and detect patients' needs especially when utilizing online communication tools with a patient in writing but also the competence levels are considered critical when evaluating the adoption of eHealth services. (Das, Faxvaag & Svanæs, 2015; Kujala et al., 2018, 182).

3.4 Implementing technology into health care professionals' work – acceptance and adoption

An area which has not been profoundly studied is whether health care professionals want eHealth and how eHealth changes interactions within the health care system, as for example Oh et. al. (2005) discuss after their findings. The previous research available has revealed conflicting results of health care professionals' acceptance levels towards eHealth services. In some studies, acceptance levels have been low or neutral but simultaneously the same respondents have minimal experience of usage of such systems/technology. Therefore, subjects with prior experience of digital health service are significantly more approbative towards eHealth regardless of whether one is a health care professional or a lay person. (Gun, Titov & Andrews, 2011, 259, 262) Hennemann, Beutel and Zwerenz (2017, 280) present similar results and discuss that familiarity with eHealth technologies increase intention to recommend eHealth to patients. Further investments on health technology infrastructure was also claimed for.

In the study by Kujala et al. (2018), majority of the health care professionals stated to be willing to use eHealth services in patient work and reflected that their digital skills were good. Still, more guidance and training for a specific software or service were especially requested, and many were uncertain when communicating with patients with the help of a computer and guiding patients to use eHealth services. Also, majority of the respondents were not that familiar with the use of eHealth services as more than half had never guided patients in the use of eHealth services or searched themselves information from eHealth services. Overall, health care professionals were worried about how they must modify their work and didn't know how to integrate eHealth services in their own work. Konttila et al. (2019, 758-759) state that organisational support is vital in eHealth implementation but also adequate management and communication about digitalisation in health care is required. In addition, collegial support and the social environment at the work place have a huge impact on building positive experiences of digitalisation as eHealth has been acknowledged to affect specially the psychosocial domain in work environments (Konttila et al., 2019, 745; Borell, 2016, 36).

To encourage utilization of online patient communication and facilitation tools among health care professionals, development of guidelines and organisational changes were mentioned to play a significant role. Also, clinicians have claimed stronger eHealth evidence

base and attendance in promotion to feel more comfortable to deploy digital tools in their work. Health care professionals' aspects on eHealth services are important since acceptance and adaptation of the services and organisational systems define the impact and success of the solutions. Not only organisational infrastructures, but also health care professionals' confidence in writing and using online tools play a big role in successful implementation. (Das et al., 2015; Flynn et al., 2009, 597, 599)

Due to the decision of making electric health records available for all patients across Sweden with respect to the eHealth action plan for 2013-2018, a study was made in a pilot county about health care professionals' perspectives and opinions towards patients' access to digital health records with results showing that the opinions vary between professions with nurses having more positive outlook towards electronic health records compared to physicians. More importantly, professionals' who possess personal experience using online records or those whose patients' have experience on using online records are more positive towards this eHealth service. (Scandurra et al., 2015, 967-968) According to the systematic review by Li et al. (2013), IT experience and knowledge affected the perceived usefulness of the digital systems. The perceived usefulness then was reported to have the strongest impact on behavioural intention to technology use. System operation experience was with performance expectancy the most important predictor of behaviour intention also among health care professionals in the Ljubicic et al. (2018, 13) study.

Konttila et al. also found out in their systematic review that experience increases confidence to use technology. However, many health care professionals have negative attitudes towards technology education causing lack of motivation and influencing willingness to use eHealth. The level of health care professionals' willingness, attitudes and perceived ease of eHealth system use precedes successful implementation of new systems. Other factors in successful implementation have been suggested to include health care professionals' understanding of the system, health care professionals' active engagement to the system which is endorsed by key professionals, the system must be easily integrated into clinical practise and the system is acknowledged to produce benefits to the recipients. Still, with patients being more informed about their health status, active and involved in decision processes in health care, health care staffs' work environment changes drastically changing the role of the professionals which can cause resistance and job stress. (Konttila et al., 2019, 757-759; Keyworth, Hart, Armitage & Pully, 2018, 17; Wald, Dube & Anthony, 2007, 222)

To conclude, health care professionals should be given enough time, resources, equipment and a supportive environment that identifies the benefits of using digital systems when adopting new technologies. (Konttila et al., 2019, 759)

3.4.1 The use of UTAUT framework in previous research

The theoretical UTAUT framework (description in theoretical framework, ***5.2***) has been already used previously when studying technology acceptance among health care professionals in different contexts. In one example, the model was implemented when studying the intentions to use health informatics systems among professionals in England. Performance expectancy and experience were the highest predictors for intention. In fact, it has been pointed out that performance expectancy has been generally the most significant predictor of the intention to use technology, as also argued by the developers of UTAUT (Venkatesh, Morris, Davis & Davis, 2003) but previous studies have also suggested contradictory results. Among health care professionals in England, no difference was found between participants' profiles (e.g. profession or gender), only those who participated in implementation had a significantly more positive outlook on the system. (Ljubicic, Ketikidis & Lazuras, 2018, 13) Another study about eHealth intervention acceptance among different health care professionals in in-patient care units revealed that the behavioural intention to use eHealth interventions was low to moderate among 88% of the participants, being significantly lower compared to previous studies about intentions among patients or help seekers. Social norms (social influence) and performance expectancy predicted highest level of eHealth acceptance. In line with the study from Ljubicic et al., acceptance level did not differ between the professions. (Henneman, et al., 2017, 279-280) In a literature review by Li, Talai-Khoei, Seale, Ray and MacIntyre (2013) about health care providers' eHealth acceptance, the UTAUT model was used to as a data analysis tool. This study states that the UTAUT model is applicable but might require extension of theories on technology adoption, due to complex dynamics of the health care settings. The conclusion was supported by an African study which suggested to use a revised UTAUT model when studying health care professionals' technology acceptance in developing countries (Ami-Narh & Williams, 2012, 1388). Venkatesh et al. admitted the same areas of development for the framework referring to utilization in different user groups and organizational contexts and additional theoretical influences (Venkatesh et al., 2003, 470).

3.5 Swedish example of contradictory adoption of an eHealth service among health care professionals

The experienced change in health care professionals' role and perspectives for and against patients' online access to health records in Sweden were acknowledged in the previously mentioned study by Scandurra et al. (2015) as well as the text by Lindholm and Erlingsdóttir in *eHealth Opportunities and Challenges* (2016). Introducing the possibility for patients to access their own electronic health records nationwide led to ambivalent approval among the health care staff and different professions. Health care professionals' arguments against patient access were stated to include the worry of increased risk of formal and informal complaints from the patients leading to "unnecessary" and time-consuming explanations; patients not having the required knowledge to understand the information; and professionals changing communication methods and using "simplified" language. Scandurra et al. found out that physicians were in general less positive compared to other licensed professionals towards patients' access. On the other hand, those professionals with personal, next-of-kin or patient experience were more positive towards electronic patient records. Health care professionals' active participation in implementing the service had also a positive influence in how the reform was considered. Still, the worries against enhanced patient influence on own health data and changed patient-professional power relations seem to paramount health care professionals' perspective according to these previous studies. Both sources conclude that the impact of eHealth services on health care personnel need to be studied further. (Scandurra et al. 2015, 966-968; Lindholm & Erlingsdóttir, 2016, 42-46)

4. Problem definition and aims

4.1 Problem definition

Research about how eHealth services affect health care professionals' work and perspectives towards eHealth services are still very scarce (Lindholm & Erlingsdóttir, 2016, 47) and the research available about eHealth acceptance and adoption shows conflicting results when considering attitudes and willingness but also experiences of using eHealth services. Reasons could be argued to include the constant development of eHealth possibilities, undefined guidelines and variance of instructions between professions and educations. Health care professionals' experiences with eHealth and its acceptance have mainly been studied through literature reviews and quantitative methods (Li et al., 2013) such as surveys and questionnaires, leaving little to no data about health care professionals' personal reflections and depth on the subject. Even though quantitative research often employs methods of studying 'meanings' in some form of technique, from the qualitative research aspect, a proper access to the meanings is still not attained as the scales are preformulated and survey research reflects poorly people's actual behaviour (Bryman, 2016, 626). Also, as health care professionals' awareness of and confidence in eHealth services and tools affect the deployment of the services (European Commission, 2012, 5), it is important to study more in-depth their initial attitudes and willingness to implement the services in their work. The problem is current in the Nordic context where health care services are being increasingly digitized and specifically in Sweden, where the aim is to be the best in the world in eHealth.

4.2 Aims

The purpose of this thesis is to study health care professionals' perceptions and attitudes towards digital health care (eHealth) services in Sweden. This study aims to develop new knowledge on health care professionals' experiences of eHealth services, how digital health services and tools are accepted and to achieve understanding (Merriam & Tisdell, 2016, 15) of health care professionals' standpoint in relation to digital services. Another aspect in the study is whether guiding the use of eHealth services is part of health care professionals' daily work as health services are becoming increasingly digitized and whether

health care professionals' attitudes promote others' use of eHealth services. Also, one area of interest is to study how social and environmental factors influence the adoption of eHealth services and what kind of relationship the health care professionals consider having with technology. This thesis is conducted in collaboration with the Digga Halland project which is a collaborative project within the health care sector funded by the European social fund, Halmstad University, Halland region and the municipalities in the Halland region. The project will raise competences and efforts of health care workers and aims to increase conditions to face the developments in digitalisation in the Halland region. (Hh.se, 2019)

With the intention to study health care professionals' attitudes towards digital health services and acceptance of these services, the research problem was identified as the willingness of health care professionals to accept eHealth technology and digital services/tools in their work. This thesis aims to give insight and answers to the following research questions;

- How do different health care professionals experience the use of eHealth services and technology?
- Why do health care professionals use digital tools and eHealth services?
- How have health care professionals influenced others in using digital health services?
- How do professionals reason social influence in the adoption of digital health services?
- How do health care professionals experience technology to affect interaction with the clients, colleagues and the environment?

Through these research questions, this study aims to provide understanding of the role of technology and digital health services in health care professionals' lives, the factors influencing technology acceptance and the role of social influence and environment in how eHealth services and technology are adopted in the framework of technology acceptance, belonging and identity formation.

5. Theoretical framework

The following section describes the theoretical aspects used for this study. First, the role of technology in society is defined according to the theory of society by Niklas Luhmann (2012) as well as Martin Heidegger's definition of technology (Ihde, 2010) is presented. This is followed by introducing the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) which evaluates factors that influence technology adoption. Phenomenology is shortly introduced to act as a theoretical backbone in this study. Finally, the concept of belonging and how social influence and technologies affect our sense of belonging and identity (May, 2013) are described, also from the phenomenological aspect.

5.1 Technology in Theory of Society & Heidegger's Philosophy of Technology

The evolution of technology has gone so far that it is impossible to consider a society without technology and its effects on individuals everywhere around the world. We all have been influenced by the development of technology in how world and society are experienced. Sociologist Niklas Luhmann argues in 'Theory of Society' (2012) that technology is the superlative form of evolutionary development that has proved it's worth in complex conditions. The Greek understanding of technology has defined technology and technical performances to be something that violates the natural order, as human actions against nature and it has since been regarded to be something artificial. During the late Middle Age, the world was viewed as something with practical problems of which existence were critically assessed and evaluation of how corresponding effects could be produced began. Thus, technology was understood to be the application of knowledge about nature to the human benefit. However, it is not relevant anymore to separate technology from the "natural" world since technology has become a second nature because only few understand how it works and understanding it is no longer required in daily communication. When defining technology, Heidegger's philosophy of technology is ontological with the definition asking for the conditions that enable the existence of technology. Therefore, when put simply, a context framework is needed to enable the activities (of humans) to make technology (tools) appear. Hence, technology is not only specific things and activities but also a field where the activities and things can appear, and it has a direction of development. In addition, Heidegger has characterized how responses to technology vary from blind resistance to blind obedience,

but technology can also be approached in its essence. (Luhmann, 2012, 312-316; Ihde, 2010, 31-32, 39-40)

Society has grown accustomed to technology and made itself dependent on technology by becoming involved in it. The dependence is seen in ways that even minor breakdown can cause serious damage or breakdown in our familiar society. Luhmann (2012) questions whether technology can still be secured as the need grows and when technologies' evolutionary limits are reached. Technology has been of great importance in societal evolution by providing redundancies of various varieties, often proving its worth. Technology also gives new opportunities affecting strongly on societal communication. Reliance on technology means that societal communication must count on technology since no other options are longer available. The spread of technologies has led to increasing discussions about innovations, in which technologies are the source of ideas about what can be done differently and how. Therefore, practitioners and clients have influence on technological development. Already existing technological processes are considered as something with room for more improvement and the concept of innovation markets that new is better than old. Hence, as technology itself defines and changes the boundaries of how energy is put to work, the risks of technologies not yet available have to be accepted. One of the most interesting speculation is whether achievements of technology are irreversible and failures due to it can only be compensated with new technologies or whether technology is a bag full of opportunities from where one can reach out for endless solutions. (Luhmann, 2012, 315-324) With this study focusing on eHealth and relying on the definition that "*eHealth is about using digital tools and digital sharing of information to achieve and maintain good level of all aspects of health"* (eHälsomyndigheten.se, 2016), it can be argued that technological developments and innovations in the name of digitization of health services rely significantly on the influence and investments of the clients, health care professionals, businesses and governments, as Luhmann reflects.

5.2 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a unified theoretical framework formulated by Venkatesh, Morris, Davis and Davis (2003) combining eight previous models of technology acceptance; theory of reasoned action, the technology acceptance model, the theory of planned behaviour, a model that combines the technology

acceptance model and the theory of planned behaviour, the model of PC utilization, the innovation diffusion theory and the social cognitive theory. The UTAUT framework identifies three direct determinants of intention to use technology and two direct determinants defining usage behaviour. Age, gender, experience and voluntariness work as moderating factors for the determinants in different ways. (Venkatesh et al., 2003, 425, 447, 467). The framework is presented in Figure 1.

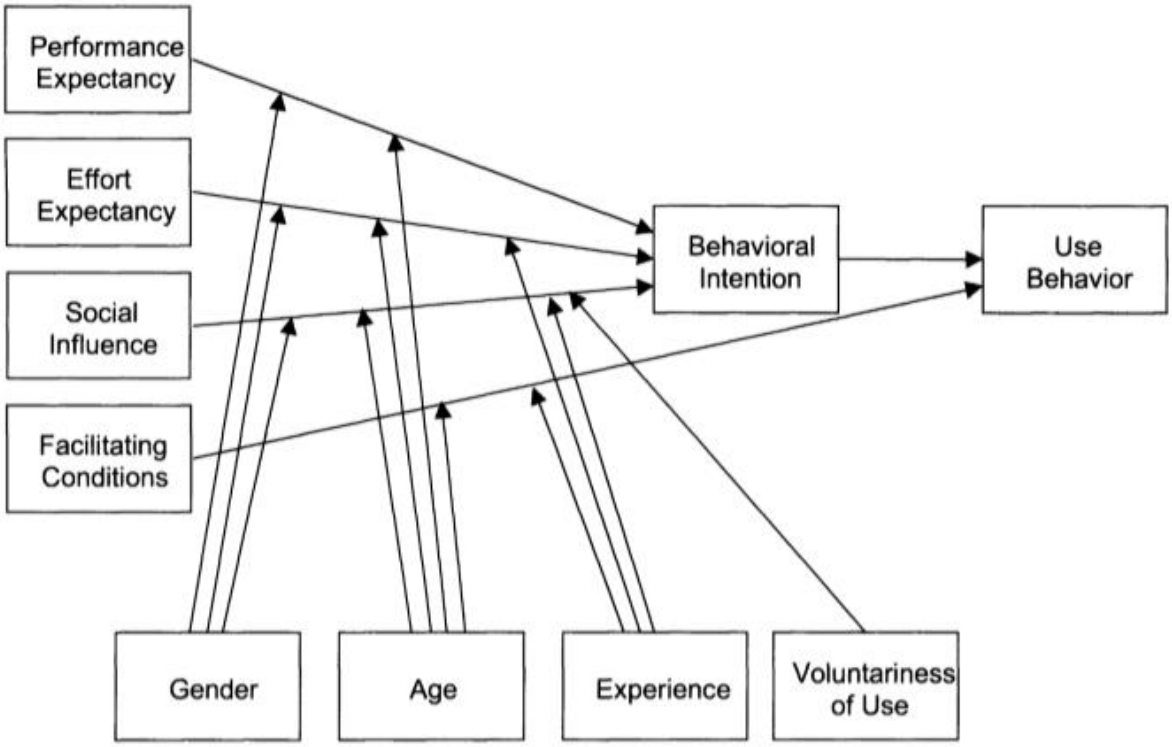

Fig. 1 Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003, 447)

Performance expectancy is the strongest predictor of intention of technology use within the different individual models and defines how much the individual believes to gain benefit in job performance by using the system or technology. Venkatesh et al. argue referring to several studies that gender and age moderate performance expectancy assuming the effect will be stronger especially among younger men. (Venkatesh et al., 2003, 447, 449-450) The definition of *effort expectancy* entails the rate of ease of using the system and is most prominent in defining user acceptance in the beginning of a new behaviour (Davis et al.,

1989; Szjana 1996; Venkatesh 1999 in Venkatesh et al. 2003, 450). Again, Venkatesh et al. argue through several studies that gender roles affect effort expectancy by being more important to women and stating that increased age has a connection to more difficulties in processing complex information but also relating to the notion that experience moderates effort expectancy. Therefore, gender, age and experience affect effort expectancy and the effect on behavioural intention is highest among older women with little experience of the technology. (Venkatesh et al., 2003, 450) The degree of *social influence* is evaluated through how individuals perceive their significant others' belief of how they should use the new system. As a consensus between the different models of technology acceptance, there is an agreement that an individual's behaviour is affected by how they believe others will evaluate them if they have used the technology. Social influence in technology acceptance seems to be a complex issue with diverse influences. According to previous studies mentioned by Venkatesh et al. (2003), the role of social influence is high in the start of an individual experience in a mandatory situation. Concurrently, women and individuals with a higher age are more sensitive to social influence but the effect decreases in both groups with increased experience. Therefore, all the moderating factors (gender, age, voluntariness and experience) are present in how social influence affects behavioural intention. (Venkatesh et al., 2003, 451-453) The rate of organizational and technical infrastructure an individual believes to exist are the *facilitating conditions*. Due to effort expectancy covering the aspect of support infrastructure, facilitating conditions can be said not being a predictive of behavioural intention, as argued by Venkatesh (2000) in Venkatesh et al. (2003). On the other hand, Venkatesh et al. (2003) present that facilitating conditions have a direct influence on technology usage. Previous studies show that especially users who are gaining more and more experience and those of older age who value more help and assistance on the job are influenced by facilitating conditions. Thus, experience and age are moderating factors for facilitating conditions influencing usage behaviour. Finally, the UTAUT model presents that behavioural intention has a strong positive influence on technology use. When evaluating the role of attitude in technology acceptance, it is argued that it is only significant when performance and effort expectancies are not included in the evaluation. (Venkatesh et al., 2003, 453-456)

5.2.1 Social Influence, identity and sense of belonging in the society

Venkatesh et al. discuss that the effect of significant others' opinions about use of technology (social influence) in technology acceptance has been controversial in earlier literature. However, they argue that social influence is significant, especially to older, women workers with less experience of the system/technology in mandatory settings which determine behavioural intention. (Venkatesh et al. 2003, 469) Social relationships and interactions affect our sense of self in how we relate to one another or define people as "others", May (2013) argues. These interactions are the source of important aspects in our identity. Depending on who we are interacting with, we use our knowledge of social rules when deciding what is required of us and in these social situations, we judge our own behaviour in the light of certain social norms. (May, 2013, 47-48, 56) This supports the aspect of social influence in the UTAUT model where our behavioural intentions of technology use are influenced by how we perceive our closed-one's belief of how we should use the system. Thus, our identity and sense of belonging are affected by the social environments we are in, which can be argued to affect how we relate to the influences at work place on technology use and adoption. Simultaneously, one could argue that the changed relationship with the health care professionals and patients due to patients having a more empowered position in decision making and increased transparency of health information (Lindholm & Erlingsdóttir, 2016, 46) can drastically change the sense of relational belonging and professional identity from the health care professionals' standpoint.

5.3 Phenomenology

Phenomenology views social reality to be constructed by thoughts and actions, not as something that is given and existing as it is. From the phenomenological perspective, the individual and the world exist in a reciprocal relationship and this relationship is the interest of phenomenology. Individuals tend to build understanding of the world and view objects and actions as something meaningful. The point of departure then is the experience which is seen as embedded in the constantly changing world. With experiences, they gain meaningfulness only when individuals reflect upon them and through the reflections give meaning to them. However, the meaning is not constructed within us, they are built in interactions between one another and each of us contribute to a common environment with shared meanings and understandings. Through understanding, we make sense of the world and what is happening

around us and categorise things. This understanding of past events is the base of our interpretation of how we are supposed to act and how things in general function. These interpretations are so deep within us that many aspects of social reality are naturally considered to exist "just because this is how things work" without thinking about historical and cultural attachments to meanings. In everyday life, we take the world constantly for granted and grasp in the familiarity of things. Phenomenology is interested in studying those unnoticed aspects of social reality, the phenomenal world. Phenomenological process proceeds in steps of reduction. The first phenomenological reduction is to reach this world of sensual every day. The next one aims towards acquiring the *essence*, beyond the individual. The essence is the 'common' factor constituting the whole groups of phenomena, the generalizable factor. One must still remember not to distance oneself too far from the sensuous day-to-day experience, as the general is within the concrete and the general can be seen in the individual. One step further in the phenomenological reduction, transcendental reduction, takes to the phase of investigating how things are constructed. Ultimately, the productive ego is the creator of its own world and only the ego exists. In conclusion, the ultimate goal of phenomenological knowledge is to understand the meaningful, indirect concrete relations in the original experience description in a particular context. (May, 2013, 58-60; Alvesson & Sköldberg, 2018, 97-98; Moustakas, 1994, 14)

5.4 Identity, belonging and phenomenology in relation to technology & digital systems

As phenomenology is particularly interested in the relationship between the person and the world, the phenomenological tradition uses interaction to find out what the experience of the relationship between the self and the others is (Smith, 2013). This interaction is used to define our "belonging", which is crucial to our sense of self as our identity is built in relation to other people; based on who we feel we belong with and who define as "others". Interaction with technology changes the ways of communication in different contexts but also how people see the world. (May, 2013, 56, 93, 126) In the Heideggerian phenomenological analysis, technology could be counted to be possible in the condition of "ready-to-hand", existing for productive use compared to only having theoretical value, "present-at-hand", which are argued to be the two ways how entities are related with the environment. In Heidegger's arguments, the world is phenomenologically apparent

through the ready-to-hand but falls in behind the equipment in use. The being itself is discovered through the physical existence. Hence, with phenomenological observation, technology as an entity or a "tool" can only exist in a context resulting in intentional structures. The characteristics of ready-to-hand then only appear in use. On the other hand, the theoretical aspect of present-at-hand can be elevated into knowledge (science). In the end, technology combines the productive and theoretical aspects and humanity is affected because science is technological in a contemporary sense. (Ihde, 2010, 42-54)

When considering the different sources of belonging – cultural, relational and material/sensory – one can state that the digital systems and tools can affect in all aspects of belonging. From the relational aspect of belonging, technology can increase the sense of connectedness to other people as social networks create a sense of belonging and technology with its various forms of communication opportunities can enhance the ways of keeping in touch. Online communities can also be effective places to receive support and get the sense of belonging by sharing experiences and ideas with likeminded people. These communities or online services can also function as ways to belong to the society in cases of illnesses or severe disabilities where leaving one's home is difficult or impossible. (May, 2013, 94, 126-128) This perspective can also act as an evidence about the benefits of an online service for the sense of belonging as eHealth might provide to some people the experience of belonging in a more fundamental way when being able to identify problems and receive help without time constraints or pressures. However, technology can also be seen to disconnect people and decrease relational belonging which might show at least partly generational differences in accustomed ways of communication in relationships. An example of a study was presented by Sawchuk and Crow in May (2013, 127) where a group of grandmothers indicated difficulties to connect to a person (their grandchild) who is physically present but mentally engaged in conversations online. The pace of inventing new forms of communication have been rapid with some methods replacing old ways and a variety of new ways that could have never been thought of only a couple of decades earlier. With the channels developing technology provides, specific "codes of conduct" develop, thus affecting cultural belonging by one being knowledgeable of how to use the systems appropriately. (May, 2013, 128) Digital tools as material objects can be important to our sense of self and sensory belonging. Technological developments change the nature of the objects we use and provide completely new tools for different purposes. (May, 2013, 147-149) With the technological developments, our senses of belonging can change fundamentally. For example, owning a mobile phone or a

laptop from a specific brand gives a “status symbol” and enhances the sense of belonging to that brand community. Simultaneously, not only can the material object enable various forms of fast communication but also it has induced us to give up old methods and change the ways we form a relationship with our environment.

6. Methods

6.1 Methodology

This thesis follows an interpretive/constructive research methodology with a phenomenological approach which assumes that reality is socially constructed and there is not one specific reality that can be observed. Single event or phenomenon is interpreted in different ways by different people and the researcher’s mission is not to “find” knowledge but construct it. The phenomenological aspect is present in describing how the experiences of the study objects are interpreted which is part of the experience. The basis is in understanding the study objects’ experience and retrieve the ‘essence’ of their experience. (Merriam & Tisdell, 2016, 9-13, 26) The constructivist perspective accounts that methodology cannot be counted to describe the reality correctly. Methodology rather considers the different forms of information generation and processing requiring interruption of the ongoing reality and knowledge that is assumed by the society. Methods can function as revealing elements in scientific research. Thus, focus should not put excessively on which specific research method is used as more effort should be placed on how to transform the distance from the object into insight and confirm and rise above the experienced study participants. (Luhmann, 2012, 13-14) In this study, the abductive reasoning is utilized, where the understanding of the contexts is grounded in the meanings and perspectives of those individuals who are studied (Bryman, 2016, 394).

6.2 Design and method

This thesis is formed of quantitative and qualitative parts. A data analysis of parts of a survey sent to health care workers in the Halland region in the beginning of 2019 was executed to investigate sociodemographic factors and baseline perceptions of digital

services/tools of the health care professionals. For the qualitative part, interviews of health care professionals were conducted to acquire in depth results of health care professionals' experiences and attitudes towards eHealth services/tools with the intention to interpret these professionals' behaviour in terms of the specific context (Bryman, 2016, 626).

Phenomenological interview was the key data collection method for the qualitative part of the study. Prior to data collection, researcher's own experiences were explored to be aware of personal prejudices and assumptions but also to reduce bias. Then, the prejudices were *bracketed* and set aside. (Merriam & Tisdell, 2016, 25-27) This was performed by the researcher giving her own reflections to the interview questions prior the interviews and the answers were acknowledged and kept aside to not influence the interview situation. To study the use of digital tools in a broader perspective and to retrieve specific patterns and reasons behind the use and acceptance of digital tools among health care professionals, the mixed method approach was chosen for this study. Combining quantitative and qualitative methods can give a more complete approach to the research area and provide a richer understanding of the subject. In more detailed terms, this study follows the explanatory sequential design, where the quantitative data was collected first and qualitative data gathering followed with the purpose of explaining some of the results more in depth. Qualitative method is essential when the aim is to explore new topics and obtain insightful data on complex issues. Also, the method of triangulation was utilized to cross-check the findings from quantitative and qualitative research and the findings in relation to previous research. (Bryman, 2016, 386, 644; Creswell, 2015 in Merriam & Tisdell, 2016, 47-48; Bowling, 2006, 131) Previously acquired quantitative data from baseline survey was utilized to get a broad picture of the current situation of digital service/tool use and familiarity among health care professionals. Five health care professionals were then acquired for semi-structured interviews which provided insight to their perceptions and attitudes towards eHealth services and what relations they possess with digital tools.

6.3 Data collection and sampling frame

The data collection for the quantitative part of the study had already taken place before the initiation of this study. Relevant parts of this baseline survey data were used for this study to provide health care professionals' overview on digital services and tools in a larger scale. The survey was distributed to public health care professionals working in

different municipalities in Halland region but also in different areas of health care in the beginning of 2019. All in all, 9161 health care professionals had received the survey and 3097 ended up giving responses. However, 2879 had completed the survey fully, which gives an answering percentage of **31**%. The baseline survey can be found as an Appendix 1.

Data collection for the qualitative part of the study was conducted with in-depth, phenomenological interviews with five health care professionals. The method of generic purposive sampling among health care professionals in different parts of Sweden was utilized to study whether the survey answers reflected perceptions in a larger context and to acquire diversity but also to reach people specifically within the study area (Bryman, 2016, 412-414; Dahlgren, Emmelin & Winkvist, 2007, 33). Therefore, participating to the baseline survey was not a requirement to be an interviewee. The requirements for the interviews ended up being a health care professional and the ability to communicate sufficiently in English because the interviews were conducted mainly in English. The length of the interviews varied from 30 to 60 minutes.

The topic areas in the interview guide were constructed according to the UTAUT model with direct and indirect determinants of technology use behaviour (performance expectancy, effort expectancy, social influence and facilitating conditions) (Venkatesh et al. 2003). Furthermore, additional questions were included due to the phenomenological approach of this study and to induce discussion about different aspects and expectations about eHealth services with the interviewees but also to give answers to certain aspects of the research questions. For example, inquiries about personal experiences of eHealth services, relationship with technology and environmental influences were added because the UTAUT model does not reflect on those areas specifically. In addition, gender, age, profession and experience in current profession/position were asked to contextualize the answers. Prior to interviewing the respondents, a pilot interview was conducted to test how well the questions and discussion flow in the interview situation and which questions are irrelevant to ask separately. (Bryman, 2016, 261, 470-471) The consent form for the interview and the interview guide can be found as Appendix 2 and 3. Each interview was recorded and afterwards transcribed for the data analysis.

6.4 Data processing and analysis

Content analysis of existing (secondary) data was utilized for the quantitative part of this study (Bryman, 2016, 309). Descriptive statistics with univariate and bivariate variable analysis was used as a main data analysis tool to search single variable outcomes and relationships between variables. (Bryman, 2016, 336-339) The data analysis was conducted with the SPSS analysing program.

According to the phenomenological data analysis of the qualitative data, the process of bracketing (epoche) own prejudices allowed openness towards and focus on the experiences of the interviewees. In the bracketing process the researcher placed own everyday understanding and knowledge of the subject aside. The horizontalization strategy was used to treat the data equally which was then organised to themes. With phenomenological reduction, the data was used to get back to the experiences of the interviewees and reflect on them to stay with the lived experience and get to the essence whilst trying to avoid judgement. (Van Manen, 2014 in Merriam & Tisdell, 2016, 27, 227; Moustakas, 1994, 33) After horizontalization, the abductive approach was used to account the results and worldview from the aspect of those who provided the results (Bryman, 2016, 394). However, the deductive approach was also utilized due to using the UTAUT model as a coding tool and an assistance to recognize and reflect factors of technology acceptance and define themes. The data was coded with themes *experiences (professional & leisure use) & general perceptions, performance, effort & facilitating conditions, social influence & interaction with the environment, attitudes, guiding the use to patients & others* and *relationship with technology.*

6.5 Ethics

Ethical aspects must be considered when conducting social research. Bryman (2016) refers to Diener and Crandall (1978) when defining main areas of consideration when evaluating ethical principles; *harm to participants, lack of informed consent, invasion of privacy and deception* (Bryman, 2016, 125). In this study, each interview participant received information about the purpose of the study beforehand and signed an informed consent or agreed separately for the interview before initiating the interview to ensure the participants' awareness about the research outline and to give a signed record of consent in case of arising

concerns (Bryman, 2016, 131). The possibility to discontinue the interview at any phase of the interview was given when informed consent was asked. Interview questions were considered in a matter that didn't violate the interviewees personal or health issues and the specific work place was not revealed in the results ensuring anonymity. Anonymity eliminated the possibility of negative outcomes for the interviewee participants. The secondary quantitative data had already been anonymized and ethically evaluated before the utilization of the data for this research. The data was provided to the researcher of this study by a professor in nursing at Halmstad University and a participant in the Digga Halland project, Ingela Skärsäter, as an SPSS file.

7. Results and Analysis

The answers from the survey and the interview results are presented together within the chosen themes to give a more coherent picture of all the results, to assist in comparing the results from different methods and to help the analysis process. The themes were constructed in relation to the research questions and technology acceptance determinants according to the UTAUT model. The quantitative results were initially chosen for this study to define how to select the research candidates for the qualitative part but ended up acting as supportive data for the interview results.

7.1 Results background

As mentioned previously, 2879 health care professionals returned a fully completed survey for the Digga Halland baseline results. When dividing the answers to profession groups, most of the responses came from assistant nurses (undersköterska) (**48**%), which was clearly the largest respondent group, since the second most responses belonged to a group which reported their profession to be "something else" (**8**%). The third largest group was care aid personnel (vårdbiträde) (**7**%). For the qualitative interviews, the following respondents were included; *a specialist nurse in prehospital emergency care* (ambulanssjuksköterska), *an ambulance nurse* (sjuksköterska inom ambulanssjukvården), *a project manager* for the Digga Halland project and a former assistant nurse, *a physiotherapist* and *a department chief* for physiotherapists and occupational therapists and herself a former occupational therapist. When representing the results, the respondents will be referred to according to their

professions. Three of the interviewees' work included patient work as two of the interviewed persons' shared a managerial aspect. With the specialist nurse and the ambulance nurse, the interviews were conducted through a video call and the other interviews were conducted with one-on-one meetings. The age range of the interview respondents was 33-48 years.

The interviews started with the respondents' own reflections of the term 'eHealth'. After this, the eHealth definition by The Swedish National Board of Health and Welfare was given to induce further discussion. With each participant, the discussion went to different directions depending on familiarity or variety of own use, reflections to usage at work place and own attitudes and perceptions towards digital health systems in general.

7.2 Work and leisure use experiences & General perceptions

The survey data revealed that of all the respondents, **87,7**% reported daily use of digital tools or services at work and **81,9**% admitted using digital services or tools daily during free time which indicates how strongly digital tools are part of one's day-to-day life. All the interviewees reported to use digital tools and services daily at work and outside work. The interviewed project manager reflected that digital tools have become a part of the "common every day" when asked about whether her personal perceptions towards eHealth have changed over time;

> *Before we didn't use as much digital equipment as we use today and of course it changes. I don't know, you use it every day and it's getting more and more common, everyday thing, it's like you don't think about it, you just use it…*
>
> -Project manager

This commentary could be argued to fall in line with the Heideggerian philosophy of technology, in the context of digital tools, that they are constantly presumably apparent in the background, "ready-to-hand", to be used for different activities without giving much thought on it (Ihde, 2010, 31, 43). Then, using technology and digital tools has become an inseparable part of the health care professionals' life at work and outside work nearly for everyone. As reflected by the project manager, technology use has become routine like, an action where one hardly pays any attention to anymore. However, precisely those mundane actions construct how we fundamentally are, our being, according to an approach of everyday life in

phenomenology (May, 2013). The theory of society also notes that society cannot survive without technology anymore as it has become dependent on digitalisation (Luhmann, 2012).

The Swedish online medical service 'The 1177 care guide', where one can renew prescriptions, book appointments, read own medical records or search health information was familiar to all the interview respondents in some way when discussing about what comes to mind from the word 'eHealth'. The specialist nurse mentioned using the service personally often. The ambulance nurse hadn't looked up own information but had experience in using the service to search information. Mobile applications, such as Kry and Min doctor, developed for contacting and talking to health care professionals were identified as well as computer and mobile programmes for professional use. The term 'eHealth' was also reflected from the perspective of what kind of health definition it includes and how health can be assessed. The specialist nurse experienced health services becoming increasingly digital a positive shift since it can reduce the number of "unnecessary" visits to ER and a doctor can be more easily reached but simultaneously predicted that eHealth services will lead to increasing difficulties to meet a doctor in person. A worry about patients' online medical records ending up in "wrong hands" as being hacked more easily was brought up in the discussion by the specialist nurse. Patients' privacy issues were also reflected in the previous research and considered as one of the main challenges of eHealth development (Scandurra et al., 2015; Erlingsdóttir & Sandberg, 2016).

From the standpoint of a health care professional and through work experience, the specialist nurse and the ambulance nurse had quite recently experienced a change in their work in the form of patients having online access to their medical records. This was regarded a negative shift since the documentation took more consideration and it had to be done more carefully. It was argued that health care professionals' texts can be easily interpreted falsely or misunderstood. The risk of misunderstandings was also considered to increase with the patients' access to large amount of information. This was experienced to strain health care professionals, as reflected by the ambulance nurse how patients call to the emergency number when reading about own symptoms online;

> *We are used unnecessarily because* (patient's) *own reasoning doesn't work that well. They go and read, and it is interpreted that there is an emergency even though there isn't. People don't have common sense anymore.*
>
> – Ambulance nurse

The ambulance nurse's statement could be argued to refer to the changed interactions with patients as their role as the "others" in seeking health care has changed which has resulted in perceptions and doubts of the nurse's own role as a health care professional and changed the sense of relational belonging with the patients (May, 2013). The statement also indicates that previously, a health care professional could count to some degree on the patients' reasoning of whether their health issues needed emergency help, but the increased and more easily accessible information had decreased the ability to reason, rather than increased which could be assumed to be more likely. Also, previous research has concluded that information found on the web could cause unnecessary visits to health care professionals (Wald et al., 2007).

The department chief for the occupational therapists and physiotherapists had also personal experience of using '1177'. Otherwise she reflected many aspects of what kind of eHealth measures their department had been doing and were in the process of planning. Their actions included introducing an online booking system for patients, online rehabilitation film clips for people who have undergone a hand operation. Also, they were planning to introduce Skype therapy sessions to a specific patient group and in the process of designing an application for people going to a knee operation. Generally, she experienced that they were "in the middle of eHealth", constantly planning and developing digital services. The physiotherapist had no personal experience of using eHealth services to reach health care professionals, arguing that he prefers "physical meetings" and with only an online or phone contact, the connection between a patient and a health care professional is lost. His opinion was that the '1177' service was useful only for acute issues, to get quick help and "the idea" of the problem. For more intense care and evaluation, he considered eHealth services cannot help;

> *You don't have the same connection with the patient, therapist or the doctor. So, as I said, I have worked as a physio for eleven years and I don't think that I am be able to do anything for the patients when they call. [….] When we talk about health or eHealth, I think directly about the assessment… there are many problems that can happen and it's not easy to asses it online.*
>
> -Physiotherapist

His statement could be said to reflect the worry of how much the "empowered patients" can assess their own condition before seeking physical consultation from a doctor or

a physiotherapist. However, he had the perception that eHealth can be beneficial in those areas of health care where a physical assessment is not needed, such as to people who suffer with psychological issues.

In line with the physiotherapist's opinion about the importance of the physical connection, the project manager also reflected the bad aspect with increasing digitalisation being the risk of losing the human contact to some extent. Their considerations suggest that relying on technology can have a significant influence on how we communicate and possibly alienate people from one another if technology will be the main form of communication (Luhmann, 2012). She did not report personal experience of using any specific eHealth service but was stern in her belief that digital services are only going to increase in the future and that the digital shift is positive. From the professional aspect, her experiences from how people adopted digital services varied with age. Her vision was that the elderly population still have many constraints when asking whether eHealth will make contacting health care professionals easier;

> ***Project manager***; *Yeah, both easy* [sic] *and harder since the old generation* [sic] *is not so fast in learning and for them it* (contacting health care professionals) *is difficult but for the young people it's normal. But for the older people because I'm working with older people, so I think a lot about them. For them it's very difficult to follow the development.*
>
> ***Author***; *Can you describe those moments when it has become evident that it's harder for them?*
>
> ***Project manager***; *A lot of times because older people can't hear or see that good* [sic] […] *you see it every day.*

Her experiences reflect that the elderly population is still somewhat left aside from being able to interact with one another with the help of digital tools. Previous research has also acknowledged that elderly citizens' adoption of digital systems must be separately assessed (Rehn-Mendoza & Weber, 2018). However, most studies have had a focus on evaluating the experience of digital tools which might not be associated with age at all. According to the sociodemographic results from the baseline survey, a clear majority of the respondents belonged either to the age group 51-60 years old (**31,2**%) or 41-50 years old (**23,4**%). The third largest group was the ones of the age between 31-40 (**16,4**%). Also, **82,5**% of all the respondents identified themselves as female giving a sociodemographic frame of the health care professionals being mainly middle-aged or older, female workers in

the Halland region in Sweden. When it comes to motivation to use digital tools, within all these age groups, over half of the respondents identified themselves to agree fully to the statement "*I am motivated to use digital services/tools/assistive aids in my work"* and one third in the age groups evaluated agreeing partly to the statement. Therefore, at least the baseline survey answerers indicate that in Halland region, majority of the middle-aged and older workers are motivated to use the tools. Still, referring to the quote from the project manager, the level of motivation might not be a strong indicator how digital tools are accepted in older age if other restrictions prevent or complicate the use.

As the project manager considered age being still to some extent a dividing factor in how eHealth services can be adopted, also the department chief had perceptions of the possibility or "risk" that eHealth could cause a gap between those who can use it and those who can't. She also reflected that there are and will be those who are in some way not able to use them but also those who don't "want" to use digital tools, and there the motivational factor comes evident. Often it is the negative attitude causing lack of motivation to adopt digital tools (Konttila et al., 2019). The project manager brought up the positive aspect of digital tools' ability to provide more flexibility to book a doctor's appointment. On the other hand, for the health care professionals, the flexibility of work methods can decrease due to the eHealth systems being more structured. This aspect was reflected by the department chief who said that after introducing the online booking system to the occupational therapists and physiotherapists, they couldn't take as many patients during the day as they used to. She expressed trust and belief in her workers' ability to change working methods. Implementing measures to support workers in the digital shift is important since, as previous research indicates, deep-routed working habits could be one obstacle in eHealth adoption (Das et al., 2015).

7.3 Performance

According to previous research, performance expectancy has been identified to be the strongest predictor of intention to use technology in the UTAUT model, but conflicting results have also been presented (Venkatesh et al., 2003; Henneman et al., 2017). The interview respondents had also somewhat differing perceptions and experiences of how eHealth had affected their job performance. The specialist nurse did not consider eHealth increasing efficiency at work nor decreasing it. On the other hand, some of the respondents

said that eHealth possibilities have helped their job performance since information can be reached on the go and can be searched wherever. The ambulance nurse reflected that certain digital tools have enabled sending information from an ambulance quickly to the doctor in the hospital which had sped up processes. Both perspectives agreed that, the possibility of patients reaching own health records online led to changed working habits by documenting less information and sharing parts of the information to other medical professionals through different channels but also that the documentation itself took more consideration and caution. This could be said to increase workload which was also one of the worries of implementing eHealth solutions among health care staff at work in previous research (Scandurra et al., 2016; Das et al., 2015).

However, the ambulance nurse reflected several positive sides of changed working habits; tasks and documentation are done more precisely and thoroughly, and there is less room for things to be forgotten within the processes. This aspect was also thought to be connected to one's professional skills;

> *It has changed so that I try to be more precise and thorough… they are positive things, as earlier I didn't care those things so much, well cared but less. So, I am more precise. It also affects your expertise that you have to reason, "If I do that, why am I doing it like this?", so I can argue my actions.*
>
> – Ambulance nurse

Yet, the ambulance nurse's responses reflected there to be more unnecessary work and frustration how everything must be "confirmed" and situations that were handled previously with "common sense" cannot be handled anymore, comparing the situation to 'Big Brother' looking after everything;

> *It feels more like an America thing where you never know when someone might sue you* […] *Yeah, it feels like you can never relax and just do your job, but you must think that this will leave evidence.*
>
> -Ambulance nurse

Even though several positive aspects were recognized to having affected own job performance, it could be argued that the professionals affected by the recent change struggled to identify to their own profession, and as presented earlier, as the patients had lost their "common sense", the health care professionals had to "give up" theirs to be able to work

within the new guidelines. Especially the thoughts of the ambulance nurse could be interpreted having acquired a new role as a health care professional where own actions must be justified to patients and to the system. Albeit the UTAUT framework does not include experience of using the technology system being a direct determinant moderating performance expectancy, according to the respondents reflections, it could be argued that new experience of a changed system would have effects on performance expectancy in the beginning of using the system.

The project manager predicted that digital services will assist in the future when there is not as many people taking care of the patients, making the work more efficient then. Aspects of digital tools saving money and time were assessed to enhance job performance. The department chief also predicted that there will be more people to be taken care of in the future, and as there will be no more money or more personnel than there is currently, creative solutions must be developed where she believed eHealth can help.

Mostly negative aspects of eHealth in clinical work was reflected by the physiotherapist, but, on the other hand, he said that the dictation tool he uses daily in his work had made his job more efficient and he prefers using an online program which helps in planning training programs for patients. Unlike the specialist nurse and the ambulance nurse, he didn't consider patients' access to their records affecting his documentation methods. He continued to document in a way that he and other health care personnel could understand it. Simultaneously, he had noticed that some patients require more explanations about what is stated in the patient documents, which consumes working time;

> ***Author**; Has it then taken more time when you have to explain to the patients?*
>
> ***Physiotherapist**; Sure, not for all the patients. Not all the patients read the journals but some of them read, they read, and they read every day and each note there that I write.*

Therefore, even though technical solutions might make documentation more efficient, as reflected in previous research (Keasberry et al., 2017), the saved time might be used to explain what has been documented to the patient. The department chief reflected that the online booking system resulted in the therapists having more structured schedules, but on the other hand, they couldn't give as many therapy times for the patients since before the change, the therapists could book freely as many patients as they evaluated to be able to handle. She

thought that in the future the work will be in that sense more structured which will not necessarily make the performance itself more efficient.

7.4 Effort & Facilitating conditions

Within the UTAUT model, effort expectancy and facilitating conditions were regarded to go hand in hand, entailing different aspects of support and organizational infrastructure and effort expectancy separately explaining the ease of use of the systems (Venkatesh et al., 2003). From a professional aspect, none of the interview respondents stated to have difficulties in using the digital tools or services available at work and for work purposes and the amount of digital resources were evaluated to be adequate in each respondents' work place. The department chief said specifically how important it was to have enough resources to enable digitalisation and how they were increasing digital resources for some of the workers who are doing their work more and more through digital health services. Sufficient resources and equipment were also acknowledged in previous research to be needed to adopt new technologies successfully (Konttila et al., 2019). For all the respondents, using digital tools one way or the other was compulsory in the work which led to inevitable use of technology. In regards with own use, the respondents stated clearly how easy the usage of the '1177' service was, either to send a message and read own medical records or only search for information. The easiness of use also affected the specialist nurse's attitude;

> *At first when it came I did not have so many thoughts about it because I didn't use it but when I discovered that I could easily contact in regards with my prescriptions it was easier for me, I liked it.*
>
> -Specialist nurse

With the perceived easiness of using the systems, all the interview respondents considered themselves to be competent in using the digital systems required at work. This statement goes in line with previous findings from Kujala et al. (2018) where health care professionals evaluated their competence as quite good as well as with the baseline survey data where majority of the respondents evaluated their digital competence either 7 or 8 in a scale of 1-10 (1 referring to low competence, 10 referring to high competence). Table 1 Presents the deviation of the survey results of self-evaluated competence (mode 7, mean 6,94).

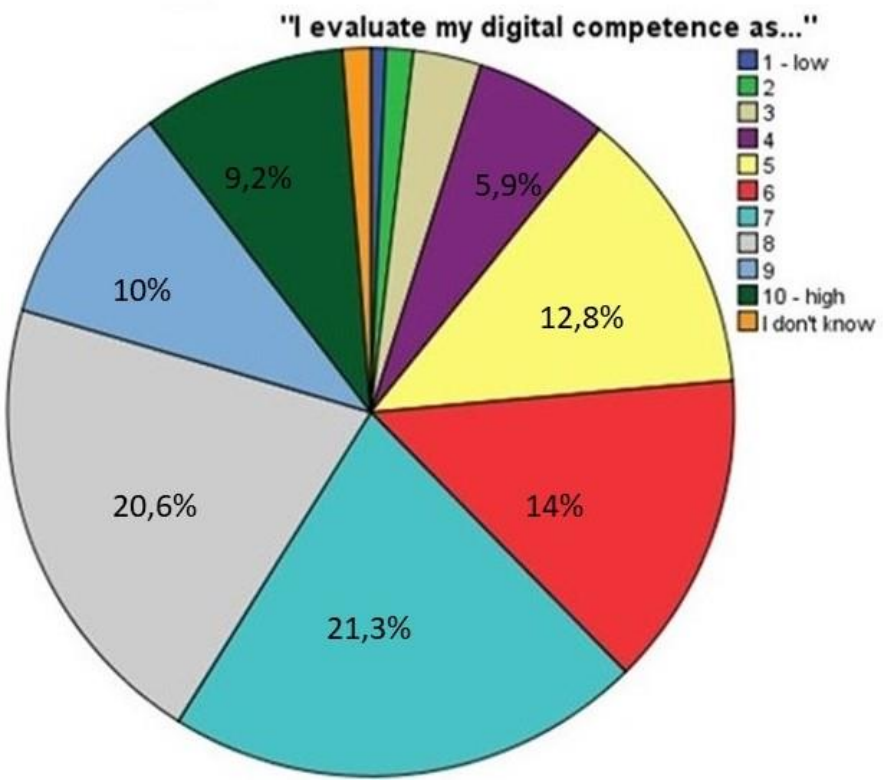

Table 1. Self-perceived digital competence

In regards with health care professionals competence in instructing and motivating patients to use eHealth services, previous research noted it being low (Kujala et al., 2018). The interviewees were not separately asked to evaluate their eHealth competence but as their experience of guiding eHealth to patients relied mostly on own quick responses of "informing" about eHealth possibilities and their own use of eHealth services was infrequent, it might indicate lower eHealth competence. For example, the ambulance nurse stated that because she hadn't had the need to look up own medical records, she had felt being less competent in guiding the usage to patients. She reflected that by knowing how the records are displayed in the service and how it feels to look up own information, she would be better in guiding the patients. This aspect was also discussed in previous literature as familiarity with eHealth technologies had a connection to increased intention to recommend eHealth to patients (Gun et al., 2011; Henneman et al., 2017).

The only restriction in conditions was mentioned by the ambulance nurse, who reflected that her conditions to use eHealth tools were partly constricted since patient information couldn't be reached in the ambulance and the situation relied on the patient's narration. Still, not having the patient records might prevent the patient's current situation to

be evaluated according to the background information. The digital systems working differently in different regions in Sweden was also criticised. The ambulance nurse reminisced that in some cases this difference had led to unclear situations how a patient should be treated. Also, the department chief admitted that the documentation system in the department's use was not that compatible with new services. Coherence of the systems and eHealth's ability to provide clear instructions and information for all stakeholders were hoped for by the respondents. Also, previous research has claimed for better health technology infrastructure (Hennemann et al., 2017).

7.5 Social influence & Interaction with the environment

Previous research has shown conflicting results of the role of social influence in technology use and adoption within the UTAUT framework (Venkatesh et al., 2003; Henneman et al., 2017). Dissonance was also evident in the interview respondents' answers on how they had been affected by others or how they had affected others when it comes to technology use or eHealth acceptance. The specialist nurse and the department chief explained separately to be the ones affecting their social environment by introducing and guiding the use of eHealth services for family members. For the specialist nurse and the ambulance nurse, the social effect at work stayed in the level of discussing how eHealth (online patient documentation specifically) affects working methods. The work environment was reported to be more negative towards patient's access to online records since the change of documentation methods had led to information going forward differently and one had to be generally more careful. Otherwise, a clear and interesting reflection of complete independence of social influence was reported by the specialist nurse;

> *I think it's just my own thought* [sic]. *I don't follow others, but we discuss it* (writing to patient records).
>
> – Specialist nurse

Venkatesh et al. (2003) stated that social influence in the UTAUT model is moderated by age, gender, experience and voluntariness of use and hence, more significant on mandatory settings among older women who have less experience on the system. Among the interview participants in this study, social influence in these terms couldn't be completely confirmed since the age differences of the respondents didn't show much deviance and for all

the participants using an eHealth service was one way or another mandatory, mostly in the form of online patient records for the ones doing clinical work. According to the results of this study, the effects of gender and experience could be argued to have an opposite effect since the male physiotherapist with the longer experience on the online patient records was most negatively influenced from the social aspect when considering technology acceptance. However, this cannot be generalized due to the small sample size and only one male representative.

The interviewees who did clinical work had experienced that patients had been increasingly active in informing that they themselves had used eHealth services in seeking information or contacting health care professionals. Patients' activity in looking up own information, the amount of information available and patients being more aware of their rights were reported to have caused certain pressures to be better in using eHealth services but also raised general worry about possible misunderstandings. This aspect of patients being more empowered has been also previously stated to increase the risk for health care staff to suffer from work stress and resistance to the change as well as worries about changed role as a professional (Borell, 2016).

Social influence in the UTAUT framework could also be considered as an important aid to encourage people to adopt digital tools. As educating other health care professionals was a major part of the project manager's work, she reflected how she could influence on their adoption of digital tools and services, to try to convince people in using the tools. She stated that the atmosphere towards digital tools in those situations varied between negative and positive but mostly the perceived stress among the health care professionals was a result of not having enough time and staff to focus on introducing new digital tools and services. Previous research stated too that implementing new systems successfully requires time and resources. (Konttila et al., 2019).

The project manager stated having a helping atmosphere at work if she needed assistance with new digital tools. The physiotherapist, working at an own clinic without immediate colleagues, reflected his own perceptions towards eHealth on several occasions to what kind of negative experiences or attitudes his patients and other health care professionals he knew had had and how only the people working among the digital tools advocate the digital possibilities;

> *I think I talk also with other colleagues and yeah… I think the people I have been talking with, I haven't met anyone that was so happy, so I think that people who are happy are the people who are working there* (among the digital services).
>
> -Physiotherapist

Considering that collegial support and social environment at the work place have been studied previously to have a significant impact on building positive experiences of digitalisation (Konttila et al., 2019), it could be stated that social influence in his case was caused by his patients and other colleagues (not work environment) attitudes and the complete lack of the social work place influence. The department chief reflected patients' influence on health care professionals from the aspect of her employees and claimed that it was not that clearly seen among the physiotherapists and occupational therapists, but the work place atmosphere was optimistic towards eHealth. As May (2013) has argued and where phenomenological tradition is based on, we view ourselves, build our identities and relate to one another through social interaction. The positive work environment could be a result of the individuals in it sharing a similar connection with technology which had resulted in a stronger sense of relation to one another or on the other hand, introducing digital tools or services have been the factor that ended up enhancing the collective sense of "us". The department chief had herself sensed to be influenced by her employees and identifying herself strongly with them;

> *I can say that the physiotherapists, they are more positive,* (they) *want to explore more and I think that makes me find it more positive and "yes, what could we explore!" than to when you meet resistance and maybe I even back a little maybe… yeah.*
>
> -Department chief

The department chief stated that some of the therapists were involved in planning and implementing the services at their work and majority of them were physiotherapists. One of the key aspects of implementing eHealth solutions successfully has been stated to include engaging the workers themselves to the process where also key professionals are in a supporting role (Keyworth et al., 2018; Ljubicic et al., 2018). For example, the interviewed project manager had adopted the position of endorsing and supporting other health care professionals in digitalisation. The survey data revealed that **35,2**% of the answerers related

partly to the statement *"In my work place, we often talk and exchange ideas about digital services/tools"* as only **13,2**% reported to agree fully. Interestingly, almost the same amount, **12,9**% disagreed completely. Also, majority of the survey respondents (**62**%) reported not being involved in the process of developing digital tools/services or having influenced in the development process. From those respondents, **53**% agreed fully to the statement *"I am motivated to use digital services/tools/assistive aids in my work"* and **39**% agreed partially to the statement. The results could indicate that even though the professionals express a certain level of motivation towards digital services, being part of the implementation process and being influenced to use the digital tools in the work environment in a positive sense, is still quite low.

7.6 Attitudes

Attitudes towards eHealth according to the interview results were conflicting; positive and negative aspects of it were equally found and explained throughout the interviews by each respondent. With some, the attitudes reflected hopes about making the care more available for everyone and put focus more on those who need the help. Also, the specialist nurse stated positive attitudes after starting to use eHealth services personally and informed to 'definitely' keep using them in the future. With the respondents doing clinical work, the professional stance leaned more towards attitudes that reflect worry, frustration, disbelief and questioning own professional skills. For the ambulance personnel, the professional attitude was not as positive as the respondents had to evaluate what information should be included in the patients' medical records;

> *It's just, I have to think more what I write in journals which is hard sometimes because I want to write something and don't know if they're gonna* [sic] *read it and it's my name standing so I really have to think. Especially with aggressive people. Maybe I tone it down a little or something.*
>
> -Specialist nurse

> *There is the good side that everything is gone through, so less will be forgotten. But it feels more like it is surveillance and you can't work in peace.*
>
> -Ambulance nurse

Both nurses had attitudes changed towards negativity after the online patient records were available for the patients to access. Their reflections give the impression of how digital tools had led them to change their professional methods in the worry of the patients or the "others" judging their actions and that they cannot "only" count on their professionalism. In other words, transparent digital tools have set a new "norm" which have defined what is the appropriate way to communicate (May, 2013). To this norm, the nurses could be struggling to change their behaviour to. Attitudes indicated that even though digital health services were generally considered to benefit the health care sector, various measures must still be made for the services and tools to assist health care professionals' work.

Most negative attitudes towards eHealth were reflected by the physiotherapist who stated early in the interview that he "has no faith in eHealth" because in his opinion one cannot attain the trusting relationship with the patients through digital channels. Through personal experiences with attempting to guide own relatives through a video chat, his bad experiences of not being able to make a proper assessment led to his attitudes becoming more negative towards digital health services. Also, after hearing negative things about eHealth from patients, his attitudes towards eHealth changed to be more negative. He was also frustrated how certain eHealth applications are constantly advertised and had felt forced to use these services and suspected their success after hearing one specific digital service opening their own "physical" health care centre.

For the project manager, positive attitude and certainty towards own digital competence and knowledge led her to take up the current position and reflected her positive attitude also towards eHealth. The department chief admitted that initially when eHealth started to become visible in her department, the first feeling was anxiety, which she considered to be normal since people didn't know how it would affect their work. After the initial shock, she had sensed the general attitude becoming more understanding and her own attitude toward digital health services was very optimistic and positive;

> *For us it was very, very good to have this* (rehabilitation) *film and it has been good for the patients too. They can be prepared, and they know what they have to do… […]. So, there is very much we can do, both to help the patients but even to help ourselves making good work.* [sic]
>
> -Department chief

Her attitude reflects that digital tools can assist in not only providing the patients good care but also the approach of "we can do this together", to build up a collective consciousness, "group mind" (May, 2013) at the work place through digital tools to see the good sides of the change to help to make most out of it for their job performance.

7.7 Guiding patients & others

Previous research has found out that health care professionals consider their competence in guiding eHealth to patients low (Kujala et al., 2018) and health care professionals might still be unaware of the current eHealth services that they could introduce to the patients (Kujala et al., 2018; European Commission, 2012). However, all the interview respondents acknowledged to having some experience of guiding eHealth services or tools to patients or other health care professionals or had been talking about how eHealth should be promoted to patients. The interview respondents doing clinical work said that the guidance of using eHealth to patients was not as its own part of their work. The specialist nurse and the ambulance nurse had taken own initiative to inform patients about the options of how to reach health care professionals through digital channels;

> *… sometimes I have told them to call somewhere or tell them to log in to get an appointment. Just so they don't have to sit in the phoneline so long. Just so you* [sic] *can get the time.* […] *We don't have any education in it or they* (managers) *do not tell us to tip about this eHealth.* [...] *It is only my own experience that I tip them.*
>
> – Specialist nurse

The physiotherapist had also guided patients to use the '1177' service but only if the patients separately asked for it, for example to change one's health care centre. Otherwise, he was active in using a specific format of eHealth, an online application to make training programs for the patients and guided the use to patients for them to see the exercises in a video form.

As said, the project manager had the aspect of guiding other health care professionals how to utilize digital services in work and change working methods. Her aim was to reach particularly those who were most negative towards digitalisation and give them her time and understanding which usually was all that was needed;

> *I try to see them and talk to them … and listen because if you listen you win a lot and sometimes you don't have to say so much, just they speak about it… Sometimes you don't have to do so much. I think time and just that you see someone, means a lot.*
>
> -Project manager

The department chief had had group discussions with her workers about how to guide the patients to search the information from '1177' and she knows that many of the employees promote the eHealth service by at least informing about the existence of the online service. Still, in her opinion eHealth services could be promoted more efficiently to the patients;

> ***Department chief;*** *I know that many of them say that* (about eHealth to patients), *but it could be better.*
>
> ***Author****; Is it then part of the therapist's work to guide the patient to use eHealth services?*
>
> ***Department chief****; We talk about it as a group that we should help the patient to find all these things that are there in '1177' and so on, but we are very different as individuals and how much we introduce I think.*

Her comment might refer to an expectation of the health care professional's role changing to be the one in the position of mediating the digital services to the patients and spreading the information about digital tools forward. Still, it varies between individuals how that role is embraced. Though, the interview results indicate that the patients have been more active in demanding that the services would be more reachable and putting the pressure to the health care professionals to develop the services further and to be more aware of eHealth solutions.

7.8 Relationship with technology

Throughout the interviews, the health care professionals stated mostly to be comfortable with using technology at work and during leisure time and that the digital possibilities in different ways had given them the sense of empowerment. Most stated to have felt the feeling of relief as a user of digital services that there is the possibility to reach a health care professional online. All in all, answers from the interviewees indicated wide variety of responses to technology but none of the opinions stated either extreme view of

blind obedience or rebellion as reflected by Heidegger (Ihde, 2010). This can be concluded to have been evident in how each respondent found positive and negative aspects in digital services for example. The ambulance nurse reflected technology had increased her professional skills since the information is available and can be reached anywhere and anytime. On the other side, she admitted that knowing how far technology has developed, it had been acting as a hindrance to continue educating herself further because she had felt her competence levels in technology use not being enough for intense use in educational purposes. The project manager reported to be generally an active user of digital services. She reflected that her positive approach to technology had resulted in eagerness to keep on learning new things constantly and believed that a will leads to a way. The department chief evaluated herself not to be that eager user of digital tools in general and thought that being more willing would help personally as she was confident that the world will go to a more digital direction. However, in work use, she saw digital health services being a complement to traditional methods, not a replacement as in physiotherapists' and occupational therapists' clinical work the patient relation must be established also with a physical meeting or assessment. The physiotherapist was in general accepting towards technology with its possibilities to do more things on your own in an easy way and that a lot of things can be done only with the mobile phone. However, from a professional aspect, he also expressed how important it is to reach the level of trust and connection with the patient and that could be only reached with physical meetings.

Even though technological developments were reflected to have given better and easier possibilities to be in contact with friends and family elsewhere, boundaries to limit excessive use was also stated to be in use. The project manager reflected to limit smartphone use at home during dinner time, so people would be more present mentally. As the ambulance nurse stated to use her smartphone "a lot", she also tried to not use it "too much", to not be addicted.

Regarding digitalisation within the health care sector, the project manager and the department chief shared the perception that digitalisation of services is only going to increase, and one must keep up with the change in one way or another and to be creative. For example, the project manager states her role at work being directly part of advocating digitalisation;

> *I am trying, that's my job… Of course, I am trying to convince people, but everybody has a right to their feelings* [sic]*… But the future is digitalisation*

> [sic] *so we can't stop it and somehow you just have to accept that this is the future. So, I don't think we can stop it* (digitalisation).
>
> -Project manager

The project manager's statement follows directly the theory of digital society, that technology has already became like a second nature to us and it is the technology itself defining how far it will lead (Luhmann, 2012). Also, it was considered that the digital shift requires the patients to take more responsibility from their care which can be a new perspective for the health care professionals;

> ***Author****; What kind of expectations do you have towards eHealth in the future in relation to your job for example?*
>
> ***Department chief****; I think that more of our pre- and post-*(rehabilitation) *information will end up in the web and '1177' and hopefully we can find the patients who don't find that* (the information) *or need more time and maybe more this that we meet and that's the way I think we have to go. Everyone who can do it themselves, they have to do it and the ones who don't, need more support… Because traditionally, in health care we are very "caring" and we don't think that the patient could live without us. That's something we have to change.*

A valid argument from these interview results could be made that digitalisation in the health care sector means inevitably that the role of the health care professional must change. As the department chief reflects, the "traditional" role of the health care professional has meant being the one taking care of the patient and to that scenario, the relationship between the professional and the patient has based on. Similarly, that scenario has defined the professional's fundamental sense of self and with the new rules provided by digitalisation, must be constructed again as self and the society exist in a concurrent, constant relationship with one another (May, 2013). Some people might consider this change easier than others which could affect directly the adoption of digital tools.

8. Discussion

8.1 Analysis discussion

According to the quantitative and qualitative results of this study, health care professionals are nowadays accustomed to using various digital tools at work and outside

work and consider themselves as being competent in using them. However, when going deeper in the experiences of how digital services and eHealth specifically are accepted and adopted, interesting issues and perceptions come up.

As the interviews with the health care professionals begun with personal perceptions of what is eHealth, each respondent began to reflect on different aspects. The answers differed from naming specific online health applications or services, reflections of what 'health' itself is, an immediate response of negative attitudes towards eHealth and naming what kind of solutions that respondent's workplace have in the name of eHealth. This variety of perceptions already relates to the challenge of a specific eHealth definition. Even though several stakeholders have contributed with their definitions, the variety and inaccuracy of the definitions might still be considered confusing among the health care professionals doing their day-to-day work. As stated in the theory of society, technology has become an undeniable part of how the systems work in society (Luhmann, 2012), it could be argued that the digital shift in the health care sector has been so subtle but strong that it could only be perceived to having become a necessary part of the everyday life, without giving an active thought on how technology has actually affected our daily routines. In addition, the differences in using the terms "eHealth", "digital health" or "digital services or tools" can be still unclear and give different perceptions depending on the respondent's background. For this study, eHealth was defined according to the definition by the Swedish National Board of Health and Welfare; "eHealth is about using digital tools and digital sharing of information to achieve and maintain good level of health" (eHälsomyndigheten.se, 2016). However, for those professionals who answered the baseline survey a definition of digital tools and services was provided; "With digital services we mean different systems that help us with different processes. 'Digital tools' is an umbrella term that describes and can concern different technical tools that are used as assistive devices, for example smart phones, common work computers, tablet computers, artificial intelligence and documentation systems". Therefore, the differences in the definitions could be one factor that affects how the digital systems are experienced, especially in the sense of how the services and tools are considered to affect health or how they can be used to affect patients' health.

Previous research has clearly stated, that health care professionals who are familiar with a digital system and have experience in using it, are more prone to recommend it and guide the patients to use that system and in general are more positive towards the system

(Gun et al., 2011; Scandurra et al., 2015 Henneman et al., 2017; Konttila et al., 2019). This study confirmed this aspect partly but also brought up the differences of experience depending on whether the health care professionals' are in the "professional role" or in their "leisure time role", when they are themselves the users of eHealth services or digital tools. For example, even though it was reflected that eHealth services can decrease unnecessary visits to the doctor, contrary to this, it was experienced in the role of a health care professional that patients were taking more contact since they were thought to be more conscious of their health status and reflect that to the information they retrieve online. Therefore, patients' role as being more involved and having the access to information previously only attainable by the health care professionals was considered negative and causing job stress among the health care professionals doing clinical work, which has also been acknowledged in previous research (Borell, 2016). One can see several reasons existing behind these varying experiences. First, as seen from the difference in attitudes and acceptance towards eHealth depending on the stance (professional or user), there can be a clear distinction of opinions between the public and private spheres (May, 2013). Hence, even if the personal sphere (user) experience sees the positive side of eHealth, the public sphere (professional) experience of eHealth sees the negative side. Secondly, the changed situation in how much patients contact the health care professionals and how much they can see their own information had caused the health care staff the pressure to change their role according to the new norm within digitalisation, resulting in resistance. They had to evaluate their own actions with the norm and change behaviour accordingly. Also, it was stated in the interviews that, with digitalisation, the health care professionals will be forced to change one crucial aspect of their professional self; to stop patronizing the patients and learn to give some of the responsibility to the patient. One could argue that this is especially difficult for the health care professionals if the professional self is largely based on the patient's dependence on the professional. In a sense, the change requires blurring the line between the patient and the professional and what that relationship entails resulting in feelings of dissonance as technology can decrease the sense of relational belonging (May, 2013). The worry of a changed professional-patient relationship with a lack of trust towards eHealth services and tools could be argued to result in a negative attitude towards digitalisation according to the findings of this research.

In this study, the interview respondents mostly agreed that digital services had been increasing their job performance and efficacy. This was also seen among the respondents who

had negative attitudes towards eHealth or reported factors of how eHealth had influenced their work negatively. This corresponds to previous research about how performance expectancy had been one of the strongest predictors for behavioural intention to use technology within the UTAUT model (Henneman et al., 2017; Ljubicic et al., 2018). For the interviewed health care professionals doing clinical work, their experiences from eHealth services relied mostly on the patients' online medical records and changed working methods which had increased job stress for those who were still quite new to the change. The change in patients' access to medical records and them being aware of what was written in the records had also led to professionals spending more time on explaining the patients the written information in layman's terms and sharing some of the information to other health care professionals through other communication means. These aspects were also arguments against patient access in the earlier studies (Scandurra et al., 2015; Lindholm & Erlingsdóttir, 2016). Still, the professionals' opinion on this varied according to how long the professionals had had time to adjust to the change. For example, the physiotherapist didn't consider patient access separately a negative reform even though it affected his working methods negatively, since he had more experience of using the system compared to the ambulance personnel. Therefore, this study suggests that experience moderates performance expectancy which is not indicated by the UTAUT model.

This study reveals that medical record transparency and patients reaching more information had effects on some of the respondents' professional behaviour and in general, eHealth services had affected all the respondents' working methods and was predicted to affect more in the future. This aspect relates to the research question of how social influence is reasoned in how health care professionals adopt eHealth solutions. Social influence was not so much regarded to derive from one's significant others' beliefs as described in the UTAUT framework (Venkatesh et al., 2003), but the respondents were more influenced by their patients and colleagues on how eHealth was perceived or how attitudes towards it had changed. The physiotherapist for example recalled hearing negative user experiences from patients as well as other health care professionals. In addition, the lack of own immediate social work environment which could induce positive atmosphere towards digitalisation along with own negative user experiences reflected as disbelief and strong negative attitudes towards eHealth. However, some responses reflected that the professionals themselves were the ones using their knowledge of the digital health services to influence their family members and other health care professionals to use the services. Therefore, the aspect of

social influence and how to categorize it can be concluded to remain a complicated factor as also stated in previous research (Venkatesh et al., 2003), but this study shows that social influence can be a significant factor in technology acceptance.

As social influence is regarded to be a complex issue, all the moderating factors (age, gender, experience and voluntariness of use) are reported to affect it in the intention to use technology in the UTAUT model. As reflected earlier, older female workers with less experience in mandatory settings are categorised to be the most affected by social influence. This study couldn't confirm this but left an open space for discussion. As the age spectrum (33-48) of the interview respondents was rather narrow, no specific age-related conclusions on the answers could be made. The interview results referred that the older population is still lacking skills, but not that much motivation to use digital tools and therefore, technology had affected in their chances of participation and interaction. However, for example the UTAUT model does not specify what is the age limit to be categorized as "older"; is it the older people among the work force or among the general population? Also, there is the dilemma of how age will be reflected or considered as a determinant in the future when the older generations will also be the ones who have had a lifetime experience of using digital tools in some form. This is one aspect that needs to be considered when conducting future research on how age affects technology acceptance and adoption.

In this research, the respondents represented different professions, but no clear distinctions could be made how the profession or experience in the profession affected attitudes towards eHealth and technology acceptance. The positions of the department chief and the project manager were different to the other respondents in the sense that the development and promotion of digital health solutions was a big part of their work. Not the profession itself, but more the professional position, could be argued to affect the attitudes and acceptance significantly. Also, as the physiotherapist stated directly to consider the ones working within the development of digital services to be the ones "happy" with them. The interviewed professionals doing clinical work did not bring up in the conversation being themselves part of implementing or developing eHealth services or tools. This goes in line with the survey results where majority of the respondents hadn't participated in the development process either. One can speculate; would the professional response to eHealth services of the respondents be more positive if they were associated with the implementation or development themselves? According to the previous research (Ljubicic et al., 2018;

Konttila et al., 2019) and the results of this study, one could argue that the response would be more acceptive.

Similar assumptions could be made when considering the results on patient guidance. Currently, the interviewed professionals doing clinical work did not have eHealth guidance to patients separately part of their work. If the work places would introduce separate and specific guidelines or instructions on how to promote eHealth to patients, the professionals would perhaps have more positive outlook on digital services and feel themselves more competent in guiding the patients. This aspect can be argued since previous research has reflected that organisational guidelines and processes that are up to date with the eHealth development are demanded to develop workers' eHealth competence (Kujala et al., 2018; Das et al., 2015). This difference of having a systematic approach was already seen within the responses as the department chief reflected how their work environment had tried to be not only consistent but also supportive in involving the workers in the development process which had resulted in having a positive atmosphere towards eHealth. In addition, as the results suggest that those professionals who did clinical work and didn't have systematic experience of guiding the patients in eHealth, experienced more the influence from patients and therefore, were more susceptible themselves to include guidance to their work. So, the question is, who is guiding who in using eHealth services or is it more desirable that the communication of eHealth between the patient and the professional is conversational?

The results of this study point to a positive direction in the light of the most current Nordic eHealth strategies and the Swedish Vision eHealth 2025. As the strategies put emphasis on how health care professionals should have the needed tools to utilize eHealth in their work and that the systems are usable, the interview results indicate that at least the resources are evaluated to be adequate and that the use of the current systems in use is easy. However, room for improvement can be found as the strategies also aim for increasing possibilities to use eHealth in work and building eHealth competences to improve health care professionals' skills (Hyppönen et al., 2017). Even though the results reveal that the health care professionals included in this study regarded their digital competence good in average, eHealth competence can be argued to be lower as guiding eHealth to patients was still quite minimal or not specifically part of work among the professionals doing clinical work and the familiarity with different eHealth services was limited. Knowledge of eHealth, using eHealth tools in patient work and collegial and organisational support services were some of the

identified aspects of eHealth competence according to previous research (Kujala et al., 2018; Konttila et al., 2019). In these areas, this research found out room for improvement. One of the specific goals of the Swedish strategy is to enable patients' access to their health records nationwide as described earlier which was also evident in the interview responses. The visions of the Swedish eHealth strategy were otherwise reflected on the interview answers of the department chief and the project manager who shared the perspective that digital solutions must be utilized in the future and that all stakeholders must be included in the change as different needs arise among the patients and the professionals.

The results from the respondents reflected that as eHealth solutions and digital tools had enabled the patients to take a more active role in their health care, it had been experienced to affect the interaction in the patient-professional relationship as well as the professional-professional relationship. Increased amount of health information and different channels to contact health care professionals had led to the experience of the patients having a lower threshold in contacting the professionals even in minor matters and more "helplessness" although the purpose of empowerment should indicate the opposite. Furthermore, "common sense" from the patients' perspective on their health issues as well as in the health care professionals' expert reasoning was thought to be missing or impossible when everything had to be confirmed via the digital systems or the patients use the digital systems to confirm their issues from the health care professionals. At the same time, the health care professionals considered themselves to be empowered through technology and accustomed to use digital tools when they assessed themselves as users. Technology had given the tools to stay in touch with loved ones and the means to execute things on your own which required earlier someone else's expertise. Still, technology could also complicate one's relationships with the outside world causing the loss of a deeper contact with people that is accessible only through physical presence. According to Theory of Society (Luhmann, 2012), making health care services digital would mean that they are at least partly handed over to technology which then itself defines the direction of the services' development. Even though health care services have already long been dependent on technology in different ways, with eHealth services, the development of uncontrolled forms of communication in the name of health could form with unimaginable risks. Maybe there is no option than to accept the digital change with its risks and figure new ways of how we can sense belonging to one another and be in the frontline of developing the means since the technological development is inevitable; were we with it or not.

8.2 Methods discussion

8.2.1 Method and approach

Certain limitations of using secondary data must be acknowledged in this research. Since the survey data was gathered before initiating this study, a period of familiarisation with the data and variables in it was needed to know how to use the data in an appropriate way for this research (Bryman, 2016, 312). Also, it was noted that even though the survey questions directed the answers to a similar direction with the qualitative data and correlated with the aim of the research, the data gave a rather superficial picture of health care professionals' acceptance and some of the health care professionals' included in the survey data were not relevant for this study. These answers, however, weren't separately excluded from the survey results, because the process of finding out the job description for each profession group would have been excessively laborious and leaving all the responses to the quantitative data didn't affect significantly in the overall relevance of the results as for example clinical patient work wasn't in the end a requirement to participate in this study, which was the initial plan. In addition, unfortunately the quantitative data had parts of missing data/variables in the SPSS form which had to be taken separately into consideration during the analysis process. The amount of missing data varied between the questions and the missing answers were noticed for the reported results.

Due to unexpected issues during the research process, the sample of the interview subjects changed from the initial plan and therefore, the quantitative data was treated in a different manner at the end of the project. Hence, the secondary data was mainly used to attain the overall picture of sociodemographic factors, self-perceived digital competence, familiarity of digital services and motivation to use them. Early in the process, the results from the quantitative data led to the interest of interviewing health care professionals between the ages of 40 and 60 in the Falkenberg municipality since a clear majority of the respondents belonged to that age group and the answering percentage in that municipality was among the highest among all the municipalities in the Halland region. However, acquiring the sample from this specific municipality was impossible in the given timeframe which resulted in inquiring interview participants from other regions. In the end, the interview results guided how the quantitative data was included and used for this study. Therefore, the mixed method approach functioned well for this study giving an overview of how familiar digital tools and

eHealth services are among the health care professionals as well as going more in-depth to learn about specific attitudes and experiences of the digital health services.

Using the phenomenological approach and data analysis of the qualitative material set certain challenges for the researcher since the main objective was to face the phenomena with new, "naïve" eyes and set own experiences and prejudices aside. The area, eHealth and health care professionals' perspective, of this research was very familiar to the researcher and therefore, challenges of not including own prejudices and keeping the distance to the subject and subjects were present when conducting the interviews and analysing the transcribes. Hence, the researcher's own position was kept in mind throughout the research process which was separately acknowledged when bracketing own prejudices according to the phenomenological analysis to increase quality of the research. Still, the possible effects during the interviews and in the analysis process cannot be completely dismissed. Also, as some of the interviews lasted clearly less than an hour that was planned to receive in-depth answers, answers from them were more superficial.

Because the interviews were conducted mainly in another language than the interviewees' mother tongue, inevitable language issues can be present in this study since some of the interviewees might have not been able to express themselves in a same way as they would have in their mother tongue. Also, issues of misunderstandings of the questions and concepts in English must be acknowledged. Therefore, each respondent was informed before the interview about the possibility to conduct the interview partly in Swedish. Some respondents took advantage of this possibility during the interview and some didn't. Understanding the parts explained in Swedish were repeated the answer shortly to the respondent in English to confirm the correct translation. One of the interviews was conducted in Finnish since the respondent had a Finnish background. Shared background with the researcher might have affected on the respondent's answers to some degree and with this respondent, the interview lasted longer compared to the other interviews.

Another aspect of limitations when conducting qualitative interviews is whether the narrative corresponds respondents' actual behaviour. None of the respondents, their employers or work places benefitted in any way to participate in the interviews, so an argument against the respondents telling false information only for this study is strong. Still, it must be acknowledged that the interviews revealed only the respondents' perspective of the

inquired situations but that was one of the main aims of this study, to get to the essence of a small group of health care professional representatives' lived experience.

8.2.2 Quality of the research

In qualitative research like this, external reliability is difficult to evaluate since social settings and circumstances can rarely be replicated in the same manner in another instance (Bryman, 2016, 383-384). Hence, since each interview situation varied according to the respondent's experiences, the data collection situation could be challenging to replicate. However, another researcher taking a similar role as the original researcher, someone with health care background to whom the interview participants could possibly relate to, could end up with similar findings as this study. The challenge of generalizing findings is more than common in qualitative research and the purpose therefore is more inclined to generalize to theory than to populations (Bryman, 2016, 399). Regarding this study, as all the interview respondents referred one way or the other to be active users of digital tools or services, regarded that the use of technology was considered to be part of the everyday life and reflected that eHealth had changed or will change their professional role affecting the sense of belonging indicates that the theory of society and technology as well as the aspect of belonging and identity were evident in the answers. Also, the UTAUT framework could be used to categorise and analyse the answers and reflect the answers to previous research. Therefore, internal validity of this study can be expressed to be high since the theoretical framework had relevant connections to the experiences and phenomena behind the participants' output. The process of triangulation assisted in confirming that the findings from the quantitative data supported only partially the findings from the previous research and the qualitative interview results (Merriam & Tisdell, 2016, 245), and rather gave an overall view on the sociodemographic scene of the health care professionals in the Halland region. Therefore, for the purpose of this study, the qualitative data with support from the previous literature, gave the most significant findings.

For the baseline survey results and quantitative part of the study, the aim was to get as representative sample as possible to generalize the findings beyond the cases (Bryman, 2016, 163-164). However, the total answering percentage within the sample population remained low (31%) which is why the generalizability of the data to represent all health care

professionals even in the Halland area can be argued against. Not to say whether the health care professionals in Halland represent the whole Swedish population.

With the small sample size for the qualitative part of this study, one can argue against the external validity referring to whether the results can be generalized to other social settings (Bryman, 2016, 383-384). Even a small number of purposive samples can be theoretically representative of their source population and represent range variation which can be considered as generalizable information (Dahlgren, Emmelin & Winkvist, 2007, 33). However, this perspective can be criticized since the sample turned out to include health care professionals with looser conditions than initially planned and the initial purpose of a study with a phenomenological approach was to research the specific respondents' experiences. Still, the validity of this research increases with the method of conducting a phenomenological study with in-depth interviews as a similar result couldn't have been reached with a mere quantitative research.

9. Conclusion

The results of this study conclude that the health care professionals included in this research are familiar with digital tools and use them actively at work and outside work and report to be generally motivated to use them. Specifically, eHealth services and tools are considered to include a variety of definitions and the term itself causes still slight confusion among the respondents, perhaps due to variety of official definitions of the term and not being that familiar or experienced with different eHealth solutions at work. Consequently, although eHealth services and digitalisation are mainly considered to have positive effects, the attitude towards them is more negative when evaluating the services from the professional stance. The results give in this sense new insight into how patient empowerment has affected the health care professionals' sense of professional identity and changed sense of belonging with the patients.

Social influence can be concluded to affect technology acceptance both positively and negatively but not directly with the terms of the UTAUT framework. The most negative attitudes resulted with the combination of own negative experiences together with negative social influence from patients and colleagues. Contrary to this, some of the respondents reflected being the one affecting own social environment to use eHealth services, which was

partly related to the professional position of the respondent. Also, the results indicate strongly that being part in the implementation or promotion of digital health services affected significantly to having positive experiences of and attitudes towards eHealth, supporting previous research on the topic. From the studied sample, the majority hadn't participated in the development process or promotion of eHealth services.

In addition, the professional position influenced experiences of guiding the use of eHealth services. For the ones doing clinical work, patient guidance was not officially a part of their work, but all had taken own initiative to guide the patients. However, these responses reflected less competence in the overall use of eHealth. Thus, this study suggests, with referring to previous research, that implementing patient guidance and building organisational infrastructure would increase professionals' eHealth competences and positive work environment towards digital health services.

As the quantitative data indicated that majority of the respondents belonged to older age groups among the work force and due to previously acknowledged limitations of this study, further research is suggested to target the specific age groups' attitudes and experiences more in detail and how they have adopted eHealth or digital services and tools. Also, as the study findings of this research indicate that the health care professionals possess differing experiences of eHealth acceptance depending on from which standpoint and role digital services are evaluated and how long the experience of the system is, the researcher suggests future research on the topic more in detail; what are the specific effects of patient empowerment on the patient-professional relationship and how the professionals evaluate their role as a health care professional in the beginning of implementing a specific digital health service or tool compared to when the professional already has long-term experience of the service/tool? Moreover, how specific guidelines of eHealth implementation in the professionals' work would help the digital transition generally?

As patients' online access to their medical records is a discussed topic, regarding the recent changes in enabling patients' access nationwide, wider studies on the effects on health care professionals should be conducted and what kind of differences in the experienced professional role there is in a wider region and opposed to other Nordic countries. Also, continuous research on the effects of digital services is needed as different forms of eHealth are becoming more and more common within the health care sector and how the practical solutions are developed in the framework of the Nordic eHealth strategies.

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APPENDIX 1. Baseline survey

Nr.	Frågetyp	Frågetext	Koppling till fråga
1	Information	Välkommen till en kort enkät om projektet ”Digga Halland” Klicka på knappen nedan för att starta undersökningen.	2
2	Information	Digital Kompetens Med digital kompetens utgår vi i den här enkäten från Regeringens förklaring och betydelse: I Sverige ska alla kunna utveckla och använda sin digitala kompetens. Digital kompetens innefattar förmågan att följa med i den digitala utvecklingen och att stärka organisationers innovationsförmåga och konkurrenskraft. I det här avsnittet skulle vi vilja be dig tänka på hur du använder digitala tjänster/verktyg/hjälpmedel i ditt arbete. Med digitala tjänster menar vi olika system som hjälper oss med olika processer. Digitala verktyg är ett samlingsnamn som beskriver olika tekniska verktyg som används som hjälpmedel, såsom till exempel: Surfplatta, smartphone, arbetsdator, gemensam arbetsdator, dator, surfplatta, mobil, tillsynskamera, trygghetslarm, appar och programvaror. Det kan också röra såsom dokumentationssystem och ledningssystem. Det kan också vara Artificiell Intelligens (AI) och robotteknik som används alltmer inom vård och omsorg.	3
3	Enval	1. Jag känner mig motiverad att använda digitala tjänster/verktyg/hjälpmedel i mitt arbete	
		Instämmer helt	4
		Instämmer delvis	4
		Instämmer till liten grad	4
		Instämmer inte alls	4
		Ingen åsikt	4
4	Enval	2. Jag känner mig trygg när jag använder digitala verktyg/tjänster/hjälpmedel i mitt arbete	
		Instämmer helt	5
		Instämmer delvis	5
		Instämmer till liten grad	5
		Instämmer inte alls	5
		Ingen åsikt	5
5	Enval	3. Jag har tillräckligt med kompetens för att arbeta med de digitala tjänster/verktyg/hjälpmedel som jag behöver i mitt arbete	
		Instämmer helt	6
		Instämmer delvis	6
		Instämmer till liten grad	6
		Instämmer inte alls	6

		Ingen åsikt	6
6	Enval	4. Om det uppstår problem och jag inte själv kan lösa det, så vet jag vart jag vänder mig för att få stöd eller problemen lösta	
		Instämmer helt	7

		Instämmer delvis	7
		Instämmer till liten grad	7
		Instämmer inte alls	7
		Ingen åsikt	7
7	Enval	5. I mitt arbete använder jag digitala tjänster/verktyg/hjälpmedel	
		Varje dag	8
		Någon gång i veckan	8
		Någon gång i månaden	8
		Mer sällan	8
		Ingen åsikt	8
8	Enval	6. På min fritid använder jag digitala tjänster/verktyg/hjälpmedel	
		Varje dag	9
		Någon gång i veckan	9
		Någon gång i månaden	9
		Mer sällan	9
		Ingen åsikt	9
9	Enval	7. Jag får den utbildning och stöd jag behöver för att använda digitala tjänster/verktyg/hjälpmedel på min arbetsplats	
		Instämmer helt	10
		Instämmer delvis	10
		Instämmer till liten grad	10
		Instämmer inte alls	10
		Ingen åsikt	10
10	Enval	8. När jag bedömer min egen digitala kompetens så skattar jag den som …	
		1 låg kompetens	11
		2	11
		3	11
		4	11
		5	11
		6	11
		7	11
		8	11
		9	11
		10 hög kompetens	11
		Ingen åsikt	11

11	Information	Förutsättningar på arbetsplatsen I det här avsnittet skulle vi vilja be dig tänka på hur digitaliseringen påverkar din arbetsmiljö samt vilka förutsättningar som finns för att involvera patienten, brukaren eller kunden i den digitala utveckling som pågår.	12
12	Enval	9. Den digitala utvecklingen kommer att vara positiv för vår arbetsmiljö	
		Instämmer helt	13
		Instämmer delvis	13
		Instämmer till liten grad	13
		Instämmer inte alls	13
		Ingen åsikt	13
13	Enval	10. I vår verksamhet arbetar vi tydligt med patienten/brukaren/kunden i fokus i samband med den digitala utvecklingen	
		Instämmer helt	14
		Instämmer delvis	14
		Instämmer till liten grad	14
		Instämmer inte alls	14
		Ingen åsikt	14
14	Enval	11. På vår arbetsplats har patienten/brukaren/kunden möjlighet att lämna förslag och vara delaktig i framtagandet av digitala tjänster/verktyg/hjälpmedel	
		Instämmer helt	15
		Instämmer delvis	15
		Instämmer till liten grad	15
		Instämmer inte alls	15
		Ingen åsikt	15
15	Enval	12. På vår arbetsplats behöver vi öka takten för att förbättra den digitala utvecklingen	
		Instämmer helt	16
		Instämmer delvis	16
		Instämmer till liten grad	16
		Instämmer inte alls	16
		Ingen åsikt	16

16	Information	Säkerhet och etiska konsekvenser Nu vill vi att du ska fundera kring säkerheten och etiska dilemman vid användning av digitala tjänster/verktyg/hjälpmedel. Med säkerhet menar vi de utmaningar som rör hanteringen av att använda och säkra digital information. Med etiska dilemman menar vi situationer som kan uppstå i vård och omsorgen där det blir svårt att ta ställning till vad som är rätt och fel eller där det kan vara risk för bristande patientsäkerhet.	17
17	Enval	13. Jag har tillförsikt till de digitala tjänster/verktyg/hjälpmedel som vi använder på mitt arbete	
		Instämmer helt	18
		Instämmer delvis	18
		Instämmer till liten grad	18
		Instämmer inte alls	18
		Ingen åsikt	18
18	Flerval	14. Om du deltagit i utvecklingen av en digital tjänst tillsammans med utvecklare av digitala tjänster, har samarbetet stött på problem i form av:	20

		Samarbetsproblem avseende vem som definierar vad tjänsten ska handla om	
		Oenighet gällande nyttan med tjänsten	
		Juridiska oklarheter	
		Oklarheter gällande vem som äger rättigheterna till tjänsten som utvecklas	
		Jag har inte varit delaktig	
		Annat	
19	Fritext	Annat:	20
20	Fritext	15. Vilka diskussioner eller etiska problem har du upplevt eller varit med om i samband med: Genomförandet av digitaliseringen	21
21	Fritext	15. Vilka diskussioner eller etiska problem har du upplevt eller varit med om i samband med: Användningen av de digitala verktygen/tjänster/hjälpmedel	22

22	Information	Delaktighet I det här avsnittet vill vi be dig om att tänka på om och hur du varit delaktig i det utvecklingsarbete som pågår inom digitalisering på din arbetsplats.	23
23	Enval	16. I min arbetsgrupp pratar vi ofta om och utbyter idéer kring digitala tjänster/verktyg/hjälpmedel	
		Instämmer helt	24
		Instämmer delvis	24
		Instämmer till liten grad	24
		Instämmer inte alls	24
		Ingen åsikt	24
24	Enval	17. På min arbetsplats tar man tillvara mina digitala kunskaper, färdigheter och kompetens	
		Instämmer helt	25
		Instämmer delvis	25
		Instämmer till liten grad	25
		Instämmer inte alls	25
		Ingen åsikt	25
25	Enval	18. I min arbetsgrupp är det möjligt att diskutera egen osäkerhet i användning av digitala tjänster/verktyg/hjälpmedel	
		Instämmer helt	26
		Instämmer delvis	26
		Instämmer till liten grad	26
		Instämmer inte alls	26
		Ingen åsikt	26

26	Flerval	19. Jag har varit med och påverkat utvecklingen av digitala tjänster/verktyg/hjälpmedel genom att:	28
		Föreslå en idé för en ny digital tjänst/verktyg/hjälpmedel	
		Utveckla en ny digital tjänst/verktyg/hjälpmedel	
		Testa en ny digital tjänst/verktyg/hjälpmedel	
		Påverka utformningen av nya arbetsrutiner i samband med införandet	
		Utvärdera en ny digital tjänst/verktyg/hjälpmedel	
		Jag har inte varit delaktig	
		Annat:	
27	Fritext	Annat:	28
28	Enval	20. På min arbetsplats har vi diskuterat hur digitala verktyg/tjänster/hjälpmedel kan användas/utvecklas för att Öka tillgänglighet	
		Instämmer helt	29

		Instämmer delvis	29
		Instämmer till liten grad	29
		Instämmer inte alls	29
		Ingen åsikt	29
29	Enval	20. På min arbetsplats har vi diskuterat hur digitala verktyg/tjänster/hjälpmedel kan användas/utvecklas för att Öka jämställdhet	
		Instämmer helt	30
		Instämmer delvis	30
		Instämmer till liten grad	30
		Instämmer inte alls	30
		Ingen åsikt	30
30	Enval	20. På min arbetsplats har vi diskuterat hur digitala verktyg/tjänster/hjälpmedel kan användas/utvecklas för att Motverka diskriminering	
		Instämmer helt	31
		Instämmer delvis	31
		Instämmer till liten grad	31
		Instämmer inte alls	31
		Ingen åsikt	31
31	Fritext	21. Har du några övriga kommentarer kring användningen av digitala verktyg/tjänster/hjälpmedel i ditt arbete?	32
32	Information	Bakgrundsfrågor Snart är du klar! Några sista frågor…	33

33	Enval	22. Är du	
		Kvinna	34
		Man	34
		Vill ej definiera	34
34	Enval	23. Din ålder	
		Yngre än 20 år	35
		21-30 år	35
		31-40 år	35
		41-50 år	35
		51-60 år	35
		Äldre än 60 år	35
		Vill ej ange	35

35	Enval	24. Ditt födelseland	
		Sverige	37
		Annat land	36
		Vill ej ange	37
36	Enval	Ankomstår till Sverige	
		1960 - 1980	37
		1981 - 2000	37
		2001 - 2010	37
		2011 - 2015	37
		2016 - 2019	37
		Vill ej ange	37
37	Enval	25. Vilken utbildning har du? Välj din högst genomförda utbildning	
		Grundskola	38
		Realskola/yrkesskola	38
		Gymnasieskola	38
		Högskola/universitet	38
		Vill ej ange	38
38	Enval	26. Vilken arbetsgivare har du?	
		Laholms kommun	53
		Halmstad kommun	43
		Hylte kommun	42
		Falkenberg kommun	41
		Varberg kommun	39
		Kungsbacka kommun	40
		Region Halland	45
		Vill ej ange	53
39	Enval	Varberg kommun, verksamhet...	
		Träslövsvägen 23	53
		Limagården	53
		Kungsängen/Ängslyckan	53
		Styrmansvägen	53
		Söderhöjd	53
		Ankarvägen	53
		Annan arbetsplats	53

		Vill ej ange	53
40	Enval	Kungsbacka kommun, verksamhet...	
		Arbetar som chef/stabspersonal	53
		Annan arbetsplats	53
		Vill ej ange	53

41	Enval	Falkenberg kommun, verksamhet...	
		Hemtjänst	53
		Säbo	53
		Myndighet	53
		HSL	53
		Annan arbetsplats	53
		Vill ej ange	53
42	Enval	Hylte kommun, verksamhet...	
		Särskilt boende	53
		Omsorg i hemmet (hemtjänst)	53
		Legitimerad personal	53
		LSS	53
		Myndighet och central administration	53
		Annan arbetsplats	53
		Vill ej ange	53
43	Enval	Halmstad kommun, verksamhet...	
		Halmstad hemvårdsförvaltningen	44
		Halmstad socialförvaltningen	53
44	Enval	Halmstad hemvårdsförvaltningen, verksamhet...	
		Arbetar som chef/stabspersonal	53
		Annan arbetsplats	53
		Vill ej ange	53
45	Enval	Region Halland, verksamhet...	
		Ambulans diagnostik och hälsa	46
		Hallands sjukhus	47
		Kultur och skola	48
		Närsjukvården Halland	49
		Psykiatrin Halland	50
		Regionkontoret	51
		Regionservice	52
		Vill ej ange	54
46	Enval	Ambulans diagnostik och hälsa, verksamhet...	
		ADH Stab	54
		Ambulanssjukvård och sjukresor	54
		Hälsa och funktionsstöd	54
		Medicinsk diagnostik Halland	54
		Vill ej ange	54
47	Enval	Hallands sjukhus, verksamhet...	
		Lednings- och verksamhetsstöd Hallands sjukhus	54
		Område 1	54
		Område 2	54
		Område 3	54
		Vill ej ange	54

48	Enval	Kultur och skola, verksamhet...	
		Kultur i Halland	54
		Skola	54
		Stab Kultur- och skolförvaltningen	54
		Vill ej ange	54
49	Enval	Närsjukvården Halland, verksamhet...	
		Affärsområde Norr	54
		Affärsområde Söder	54
		Folktandvården Halland	54
		Ledning och administration Närsjukvården	54
		Vårdcentralen Halland	54
		Vill ej ange	54
50	Enval	Psykiatrin Halland, verksamhet...	
		BUP och Ätstörningsvården	54
		Förvaltningsledning och stab	54
		Rättspsykiatri	54
		Vuxenpsykiatri	54
		Vill ej ange	54
51	Enval	Regionkontoret, verksamhet...	
		Ekonomi	54
		Hälso- och sjukvård	54
		HR	54
		Ledning	54
		Regional utveckling	54
		Styrning och stöd	54
		Vill ej ange	54
52	Enval	Regionservice, verksamhet...	
		Område GAS och kommunikation	54
		Område IT- och teleservice	54
		Område kost- och logistikservice	54
		Område stab och ledning	54
		Område städ- och vårdnära service	54
		Område teknik och fastighet	54
		Område upphandling	54
		Vill ej ange	54
53	Enval	Jag arbetar som	
		Sjuksköterska	Tacksida
		Specialistsjuksköterska	Tacksida
		Arbetsterapeut	Tacksida
		Fysioterapeut	Tacksida
		Vårdbiträde	Tacksida
		Undersköterska	Tacksida
		Biståndshandläggare	Tacksida
		Stödassistent	Tacksida

		Stödpedagog	Tacksida
		Boendestödjare	Tacksida
		Personlig assistent	Tacksida
		Enhetschef	Tacksida
		Hälsoledare	Tacksida
		Planerare/Samordnare	Tacksida

		Annat	Tacksida
		Vill ej ange	Tacksida
54	Enval	Jag arbetar som (Region Halland)	
		Läkare	Tacksida
		Sjuksköterska	Tacksida
		Specialistsjuksköterska	Tacksida
		Barnmorska	Tacksida
		Biomedicinska analytiker	Tacksida
		Avdelningschefer	Tacksida
		Undersköterskor (skötare, sjukvårdsbiträden, barnsköterskor)	Tacksida
		Medicinsk sekreterare	Tacksida
		Psykolog	Tacksida
		Sjukgymnast	Tacksida
		Arbetsterapeut	Tacksida
		Övrig personal inom paramedicin	Tacksida
		Tandvårdspersonal	Tacksida
		Teknisk personal	Tacksida
		Administration - Ledning	Tacksida
		Ekonomi- och transportpersonal	Tacksida
		Övrig personal	Tacksida
		Vill ej ange	Tacksida
	Tacksida	Tack för din medverkan! Vill du veta mer om Digga Halland? Klicka här.	

APPENDIX 2. Interview consent form

Hejsan!

My name is Erika Jarva and I am studying the master's degree programme in Nordic Welfare at Halmstad University. I am originally from Finland and have a background in health care. I am conducting my master's thesis project about health care professionals' perceptions and attitudes towards and experiences of digital health (eHealth) services. I chose to collect the data through interviews to study the effects of digitalisation from the health care professionals' aspect more in depth and to get insight from your experiences, attitudes and social influence on the use of digital health services.

The interview will last approximately 45-60 minutes and will be recorded. The interview is anonymous and recorded data will be handled autonomously and destroyed after analysis. Participation is completely voluntary, and the interviewee can discontinue the interview at any phase. The information provided will not be used in a manner which would allow identification of your individual responses.

I highly appreciate your participation in this study, thank you!

<u>For the participant:</u>

I understand that taking part in the study will include being interviewed and audio recorded.

I give my consent to use the data for the afore mentioned study.

Place & Date

Signature & Name in Block Letters

_____

_____

APPENDIX 3. Interview guide

Informant's background

Gender

Age

Profession

Years of practising the profession/experience

Topic: Descriptive information; Personal values/experiences

What comes to mind from the word "eHealth"? → definition → thoughts?

Describe what kind of experiences you've had with eHealth services

What do you consider are the positive/good aspects of health care services being (increasingly) digital?

How about negative/bad aspects?

What are your expectations towards eHealth services?

Has your attitudes & perceptions of eHealth services changed over time? If so, how?

Topic: Role of eHealth services at work place

How are digital health services visible in your workplace as a health care professional?

Is it part of the work to guide patients in the use of eHealth/digital health care services?

How are eHealth services promoted in your workplace?

How have digital health services affected your working methods?

Is it compulsory to use eHealth services in your work?

How have eHealth services affected the efficiency of your work?

Topic: Ease of use/digital competence

Preference of using digital services/tools compared to "traditional" methods

How easy do you consider the use of digital services/tools at work is?

How able/competent do you consider yourself using digital tools/services?

Topic: Social influence at work

How do you describe the atmosphere at your work place when discussing about digital health services/tools?

Influence from boss/co-workers/patients

Topic: Social influence outside work

Influence to use digital services/tools from next of kin/friends/children

Influence from the environment

How has your social environment reflected/experienced the use of eHealth services?

Preference of using digital services/tools during leisure time

Topic: Digital Tools

Which different forms of digital health services are part of your work?

Sufficiency of technological resources at workplace to use and/or guide patients in the use of digital health care services

Amount of education/training on digital services/tools at work

Is there something more/else you'd like to add or comment?

A physiotherapist from Finland who is interested in developing more sustainable, equal and attainable health care solutions for everyone.

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