The Digital Doctor:  
- An Empirical Study on the Emergence of Digital Medical Care with the focal point on Region Skåne’s Digital Healthcare Pilot-Project.

Den Digitala Läkaren:  
- En Empirisk Studie om Framväxten av Digital Medicinsk Vård med focus på Region Skånes Pilotprojekt om Digital Läkarmottagning.

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Abstract

Introduction: We are constantly finding new ways to simplify our lives with the help of technology. To this day we humans have depended on using our five basic senses: sight, hearing, smell, taste and touch. Would the emergence of this medical application jeopardise what we humans have relied on to survive through the ages? A new development on the market is an application that allows us to seek medical care from a digital doctor.

Objective: The objective of this study is to investigate whether a digital doctor might become a de facto or norm in our society when seeking medical treatment, and could such digital service become tantamount to the traditional way of seeking medical care.

Methods: Our study uses a qualitative method where the collection of empirical data was conducted with an exploratory approach, which then was subjected to a thematic analysis where themes were identified and analysed. The study contains a literature study, one semi-structured expert interview conducted via telephone and two Internet-based interviews with participants from Region Skane’s pilot-project.

Result: The result presented key benefits e.g. it is flexible, easier for patients to disclose sensitive afflictions, and is considered convenient because of the ability receive care from your own home. However, the result also presented some drawbacks and limitations connected to a patient’s symptom and it is not suitable for patients who have a complicated medical background, which the expert interviewee mentioned during the interview.

Conclusion: The conclusion of our study is that a digital doctor is an alternative way to seek medical care, however, the limitations and risks the application presented it is yet not equivalent to the traditional way of seeking medical care.

Keywords: digital doctor, virtual doctor, digital doctor, digital consultation, digital healthcare, virtual healthcare, online healthcare, medical application.
**Sammanfattning**

*Introduktion:* Vi hittar ständigt nya sätt att förenkla våra liv med hjälp av teknik. En av de nyare utvecklingarna på marknaden är en applikation som tillåter oss att kontakta en digital läkare. Skulle framväxten av denna medicinska tillämpning äventyra vad vi människor har förlitat oss på att överleva genom åren som är våra grundläggande sinnen: syn, hörsel, lukt, smak och beröring?

*Mål:* Målet med studien är att undersöka huruvida en digital läkare kan bli en de facto i vårt samhälle eller en norm när man söker medicinsk behandling, och om detta virtuella hjälpmedlet kan anses och klassas att vara likvärdigt med att söka medicinsk vård på traditionellt sätt.


*Resultat:* Resultatet presenterade viktiga fördelar, t.ex. anses tjänsten att vara flexibelt, lättare för patienter att kommunicera känsligt symtom, samt är tjänsten flexibelt då patienten kan söka vård från sitt eget hem. Resultatet presenterade emellertid också några nackdelar och begränsningar kopplade till patientens symptom till exempel är den inte lämpligt för patienter som har en komplicerad medicinsk bakgrund, vilket experten påpekade i intervjun.

*Slutsats:* Slutsatsen av vår studie var att en digital läkare är ett alternativt sätt att söka sjukvård och på grund av de begränsningar som den nuvarande har motsvarar den inte traditionell sjukvård.

Nyckelord: digital läkare, virtuell läkare, digitalt samråd, digital hälso- och sjukvård, virtuell hälso- och sjukvård, online hälsovård, medicinsk tillämpning.
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1 Introduction

1.1 Background
Society today have come to expect certain aspects to be digitalised and healthcare is one of them where the motto is to supply a “better, faster, cheaper” service. The most pre-eminent people who expect this is the younger generation who are using some sort of electronic communication device in their daily life. This have increased the risk of expecting society to provide them with a digital option in order to follow the technology evolution [14]. Another example why the emergence of a digital healthcare is connected to spatial separation or difficulties where a digital service allows people who live in remote rural areas, elderly, and disabled people to receive medical help [17].

However, face-to-face communication is still the primary way for a patient to seek medical care, but there is an on-going shift in healthcare where people are now encouraged to seek medical care with the help of information and communications technology (ICT). This is done through a smartphone or a tablet were mobile health apps now have the ability to help patients to manage and keep track of their own health and medical condition. In these apps the user can log personal medical data and send push-notifications of reminders connected to their medical health situation. This is supposed to help alleviate challenges that the healthcare daily faces e.g. limited capacity, availability, efficiency, and quality factors. [18].

Furthermore, one of the reasons why “e-patient” has become relevant is to engage the patient in self-care with the help of digital technologies (see e.g., [2, 11-12]). These medical applications are nowadays able to support routine medical tasks e.g. clinical decisions, drug dose calculation, assessing medical records etc. [3], and there are millions of consumers who download and trust their content even though the medical applications are still in their infancy [4].

However, some of the available apps today have taken it further by allowing a patient to contact and receive medical help from a digital doctor. [3, 7, 11, 13-16]. Before the development of a digital doctor, it was and still is possible for a patient to contact a physician by telephone referred to as “telemedicine” which is still possible today [5]. Yet, humans have relied on face-to-face contact when seeking medical care, and with today’s technology we are provided with an alternative that is face-to-screen instead of a face-to-face meeting. In particular, the aforementioned new technology has been shown to facilitate the process of diagnosing, treating and monitoring a patient’s health [14].

There are several countries that have started to introduce the platform Ask the Doctor (AtD), and this type of service is currently available in several countries e.g. Canada, Greece, Columbia, China, United States, Croatia [6]. In Sweden, there are two types: the commercial and the non-commercial medical applications. Then most well-known commercial medical applications available in Sweden are Kry and Min Doktor, they both allow their users to establish contact with a digital doctor within minutes [7-8].
An example of a non-commercial would be the health portal 1177 Vårdguiden, which is a platform that allows a patient to submit a medical inquire and where they receive a text-based answer from a medical professional at 1177 within 7 days (www.1177.se) [6]. Then there is an upcoming non-commercial application based in Skane, which have just ended its pilot-project 2018 [9].

However, there are also some recent studies that have investigated the potential danger using medical applications because a patient’s safety cannot be assured. Numerous studies have brought up the technical security aspects of a digital medical system that is connected to the design of the service, it is still considered vulnerable due to the fact that they lack proper security measurements to protect the data. There is a high risk that the system might be subjected to a breach where unauthorized people are able to disclose personal data deliberately, or it is used for illicit purposes (see e.g., [2-3, 17-18]). Furthermore, there have been cases in Sweden where a digital doctor has been charged with serious sex crimes against children via the mobile app Kry, where the doctor used the application to exploit children and adults to sexual abuse [19-20].

1.2 Aim of the study
The aim of this study is to seek knowledge how and whether a so-called digital doctor might become a de facto in our society, and to investigate if a digital doctor could be considered tantamount to the traditional way of meeting a doctor. In order to achieve this, we will look at previous research studies conducted on the subject. We will also conduct one expert interview with one of the doctors from the non-commercial pilot-project who have extent knowledge of medicine that comes from a lifetime working as a doctor, and who is able to give us a unique insight and scope how this newly developed digital system works. The study will also include an internet-based interview where two people from the pilot-project who will share their experience of the digital medical platform.

The incentive behind this study is to learn more about the newly introduced digital healthcare system, where the focal point will be to investigate a pilot-project that Region Skane ended 2018 and is set to be released for the people who live in Skane 2019. The research will contribute with new data that will denote how their digital healthcare works in practice rather than just theory and identify the different types of benefits and drawbacks. This field of research is still scarce and has not been explored enough, and none have been done on the pilot-project to the extent where result have been presented for the general public. The research questions in this study will help to conclude an overall sense of the pilot-project’s digital visit, and how a patient’s symptom is evaluated and assessed in a digital service like this.

The study is relevant for those who live in Skane whether it is people who work within the healthcare or potential patients who need to seek medical care. Moreover, it is an interesting read for those who wants to know more about the emergence of digital healthcare, and the process behind establishing contact with a digital doctor and the benefits and potential risks that comes with it. Although this mainly gives the reader
an insight to this digital care meeting pilot-project the study is set to enlighten how their digital healthcare works.

The collected empirical data from the literature study, the conducted expert interview, and the answers from the internet-based interview will be analysed and discussed. This will be done to contribute with new data which could help fill the current research gap on the subject.

1.3 Research questions
- How does a digital doctor assess a patient’s symptom and what aids are used in the process?
- What main benefits, drawbacks and risks are there when using a service that allows you to seek medical care and get in contact with a digital doctor?
2 Related Literature

2.1 Previous research
There have been previously studies on digital medical care where they evaluate aspects which could be improved for example, security, safety, communication, and quality. The predominant of conducted studies have been from a patient view where they have given their input what they have experienced while using a digital healthcare system. There has not been enough research done from the medical personnel view, and their experience with the digital healthcare systems that they are now expected to use in practice. Thus, to situate the study’s research a review of literature has been conducted, including themes from previous research made on the general subject: Digital Healthcare.

This chapter will introduce a state-of-practice of the pilot-project which will conclude the process and the flow in establishing contact with a digital doctor. Furthermore, it will present findings such as themes from previous research made on the general subject: Digital Healthcare.

2.1.1 Reasons for seeking Digital Medical Care
Umefjord et al. mention different reasons why a patient seeks medical consult on the Internet instead of meeting a doctor the traditional way. Their objective of their study was to find out the reason for people to seek digital medical consult. They conducted a research where they asked participants in a survey the reason for choosing an AtD service instead of a traditional consult. The study showed that patients are prone to use an AtD service, because there might be a lack of trust in their own physician, want a second opinion, or because of the anonymity. Moreover, Umefjord et al. noted that some patient used the AtD service because they had transport difficulties, lack of time, uncomfortable in a face-to-face meeting [11]. In an empirical study made on the recently introduced Chinese AtD platform Fenda, which is a paid free-market system. They mention that this service has emerged because traditional consults are considered time-consuming and costly [16].

Other studies have reached the conclusion that some patients find it easier to disclose embarrassing issues via a digital device, because they find it difficult to discuss sensitive subjects face-to-face [6,11,15]. Digital medical care can then facilitate the patient with the information they have not received in a traditional meeting do to the fact they feel embarrassed [6].

Palen et al. draw a connection to today’s society where it is established amongst the younger generation the usage of electronic devices when communicating, and that this service might become a de facto because of this. Moreover, the application presents people with an alternative when in need of seeking medical care [14].
2.1.2 The Benefits and Drawbacks with a Digital Doctor
In a recent empirical study made by Xiaojuan et al., they identified benefits with the Chinese AtD platform. They mention that patients have the ability to contact a digital doctor within minutes and receive quick replies. This timely access to medical care is considered beneficial and crucial at times in regard to a patient’s health outcome [16].

In the study *A Virtual Doctor Prototype for Quick Diagnosis and Secure Health Information Exchange* they discuss how a virtual doctor is able to provide a quick diagnosis for the patient with the help of a medical application [30].

According to Bjork et al. there are advantages with internet based asynchronous communication between clinicians and patients. For example, such communication offers flexibility, because of the possibility of contacting clinicians remote via the Internet. This can be done with the help of a computer, smartphone or a tablet, if they have internet connection [6].

Some research mention that a digital medical care should be viewed as a complement to the traditional medical care e.g. face-to-face. It has the ability to provide a better, faster and cheaper way when diagnosing a patient [6, 14]. In an observational case-control study made by Palen et al. where they compared virtual consults to traditional consults with the help of an electronic health record showed that the information by virtual consultant did not differ from receiving it the traditional way [14]. Palen et al. also came to the conclusion that the usage of virtual consultants for non-urgent symptoms might help improve situations where a patient with more urgent inflections might get faster help [14].

In a study about text-based medical care by Bjork et al. they mention that the lack of physical examination is considered a drawback, because the information provided in a text-based medical consultation may not be sufficient enough to make a diagnosis. Another drawback is not knowing if the information is relevant or complete enough to help form a diagnosis. The risk of misinterpretation is a possibility when communicating only by written text [6].

Eysenbach points out in his study that it is important to educate patients about the risks with text-based medical care where there is no pre-existing patient-physician relationship. He came to this conclusion after researching ethical dilemmas connected to digital medical care [5].

2.1.3 Safety and Security Aspects
There are studies that show concern when it comes to security and privacy issues. The medical applications available on the market are in its dynamic phase, which means there is room for improvement to ensure a patient’s safety. They could potentially be dangerous in the sense of clinical use [3].
There are medical and public literature which are concerned with the quality of these apps and whether or not they are valid. The wide selection of various medical apps makes it difficult for a patient to know for certain which app could be considered legit and safe. As long as a developer conforms to the guidelines provided by the app store, they can publish their medical app. It is up to the patient to use their own judgement when it comes to the validity and accuracy of a medical application [2].

The study ‘Trust but verify’ - five approaches to ensure safe medical apps suggests that the two conglomerates Apple and Google should withdraw all current medical apps and create a testing program, which is staffed by clinicians, security experts, quality assurance software engineers to prelude harmful apps. Although the study conclude that such process is more than likely to fail than being successful. They reached the conclusion that it is not worth “disrupting” an established working healthcare system with a new system if it cannot offer the same security as a traditional medical care [18].
3 Research Method

3.1 Qualitative research
The method used in this study is a qualitative and exploratory approach, which is when a researcher uses inductive thinking as their frame of reference. They should aspire to face a situation, scenario, and circumstance like it is new to gain an overall understanding [21]. The investigation should be an organic process and not pre-constructed, pre-determined or fabricated at the beginning of the research process. According to Olsson et al., a researcher should regard an informant’s experiences as a whole and not as separate variables, and it can only be understood if it is seen in its context [21]. Our study will include and based on previous research, a semi-structured expert interview, and an internet-based interview with two participants. According to Patel et al., the purpose of a qualitative approach is to discover and identify the nature and characteristics of the area of field that is being investigated [22]. For example, the perception on some occurrence or circumstance, which means that the interviewer is not able to beforehand know what a bona fide answer to a question is or answer nor decide what the correct answer is [22].

3.1.1 An exploratory approach
The qualitative data analysis is done with an exploratory approach. The definition of an exploratory approach could be defined to be ’content-driven’ because a researcher evaluates and interpret the data, and then try to identify key words, themes or ideas that can help facilitate the analysis before it is construed. It is a common approach in qualitative research where categories are not predetermined like the confirmatory approach ’hypotheses-driven’ where categories are predetermined [23].

3.2 Literature Review Study
The literature study is based on research articles, journals, and conference proceedings from various departments such as, Computer Science and Engineering, Medicine, Psychology, Human-Computer Interaction, Social Studies of Science, and Economics. The databases used when conducting the literature search are ACM Digital Library, Google Scholar, and US National Library of Medicine (NCBI). The search includes research from 2000-2019. The keywords used was digital doctor, digital/virtual doctor, digital consultation, digital healthcare, virtual healthcare, online healthcare, medical application. The articles used in 3.1.1 and 3.2.1 have a correlation to the research subject. In total 10 articles were used in the literature study. However, 3 of these are considered less relevant, because these studies focus on the security and safety aspect of an application.

3.3 Interview Study

3.3.1 Expert Interview
The interview will be compared to collected data from previous literature studies. The reason for conducting an expert interview is to gain an insight how digital medical care works in Sweden, and because there is not enough research done on this
subject. The expert interview was conducted by telephone which took approximately 40 minutes and the date and time for this interview was scheduled via email.

3.3.2 Selection of Respondent of the Expert Interview
The interviewee had to be an expert in their field of work, which in this case is a doctor with years of experience and was connected to a medical platform that offers help from a digital doctor. The choice of respondent was based on who could contribute information in order for me to gain knowledge about this subject and thus help me answer my two question formulations, and it was important that the person had experience and an inside knowledge how digitalised medical care works. Furthermore, it was important that the respondent found the subject interesting and relevant. The data collected from the interview had to contain a sufficient amount of answers in order to extract data from it. The age of the respondent is irrelevant in this study.

3.3.3 Interview Structure
The structure of this interview was based on the objective of this study and shaped after the research questions mentioned in the introduction. The structure was revised several times before the structure and questions were decided. It was divided into six main sections; however, all sections had a natural transition between them. Before the interview began there was a short introduction which then led to the actual interview questions. Whereas in the internet-based interview the participants were sent the interview questions via email.

3.3.4 Interview Questions
The interview questions are based on the research questions and previous conducted literature studies done on the subject “digital doctor”. The interview questions were developed and edited during the research process. The collected literature data and the research questions played a part in which questions were relevant to ask the expert, and a few of the interview questions that are linked to previous research. The interview questions were divided into 6 parts; purpose, benefits and drawbacks, the digital meeting, discoveries, security, technical aspects, and they each contained 2-4 questions. The main aim of the questions is to answer the study’s research questions, and to do this we had to investigate previous studies say. There are studies that investigate potential benefits and drawbacks with seeking medical treatment from a digital doctor and whether or not the system should be considered safe, however, none of these are from a digital doctor’s point of view which is one of the main reasons why those questions were included in our study.

3.3.5 Internet-based interview
The development of Internet has introduced new forms of interviews, one of these forms allow you to conduct an interview via email where the questions are sent and answered by the participants in their own time [32]. The result from the interview-based interviews will be compared to the expert interview. The reason for including this form of interview is to gain additional insight how Region Skane’s Digital Medical
System works, which is why two more participants was sought out from this pilot-project.

**3.3.6 Selection of Respondents for the internet-based interview**
The main respondents have real-life experience and knowledge of the system and are able to answer questions regarding how the system works in practice. They were thus able to contribute with valuable information that will help answer the study’s research questions.

**3.3.7 Thematic Analysis**
In this study, the aspiration is to provide a rich thematic description of the data, in which the readers are able to grasp the predominant and important themes. In such approach the themes need to be a factual reflection of the study’s data set.

According to Braun et al. thematic analysis is a method that allows a researcher to identify, analyse, and report patterns (themes) within data, and it is considered to be an appropriate method when investigating an area of field that is under-researched [24]. Moreover, is it considered flexible and has the ability to present rich, detailed and complex information. Braun et al. also mention that this approach is suitable for those who are novice qualitative researchers, because it does not require a detailed theoretical and technological knowledge [24]. Braun et al. point out that the acquired data can be identified as a theme if it is related to a study’s research question, and if it represents to some degree the essence of the collected data. A theme is not categorized by the ‘size’, nor should a theme be considered to be more cogent than another. It should instead be examined as an overall theme that can be divided into sub-themes. The important aspect is whether or not the identified theme captures an aspect that is significant in relation to the study’s overall research question [24].

**3.4 Method Discussion**
The study will contain two different forms of interviews and the reason for doing this is to enrich the study with data that can help contribute with valuable facts about the system which will help answer the research questions.

The internet-based interview participants are those who first establish contact with the patient and then refer them to a digital medical meeting with a doctor which in this digital service are nurses. The doctor in this study is the participant in the expert interview who were able to answer more in-depth about the patient-doctor digital meeting.

**3.4.1 Expert interview**
The definition of an expert interview is when the interviewee is an expert in their area of study or field of work. To be considered an expert the person needs to have an extensive knowledge and experience, which is acquired from actions, obligations, responsibilities within an organisation or an institution. The expert is thus able to be viewed as a representative of their field of work because of their expertise [25].
There are several studies where only one expert interview has been presented and used [28-29], which means that this is acceptable in the research community. However, it is important that the interview fulfils the guidelines and requirements set when conducting an expert interview.

### 3.4.2 Reason for using expert interview

An expert interview can be used for different aims. There are 3 different alternatives: (1) explorative expert interview, (2) systemising expert interview, and (3) theory-generating interview. This study will present an explorative expert interview, which is appropriate because the concept of a “digital doctor” is a newly introduced subject in Sweden and has undergone little investigation. The form of interview is semi-structured where questions are somewhat flexible and open-ended, however, the formulated interview questions are constructed to obtain particular information [25].

The predominant aspect for conducting an expert interview has to do with the fact that there is not enough research done on this kind of system in Sweden. When conducting the literature study, it became evident that there are only a few studies made on the subject. For example, there is one Chinese study from 2018 that investigate and present a qualitative research made on the Chinese AtD platform Fenda, which allows patients to establish contact with a digital doctor [16].

There are currently multiple commercial digital applications that allow patients to contact a digital doctor, but only a few non-commercial applications, and one of the newer developments is a non-commercial application for the citizens living in Skane set to be released 2019. The interviewee has helped developing this non-commercial platform and is able to answer and represent the application because of their involvement and expertise and is thus considered to be applicable when conducting an expert interview.

Furthermore, the expert interview is connected to the literature study in the sense of the previous research are the foundation of what have been done on the subject. Yet, it is important to remember that this study does not speak for all the digital doctor platforms, the purpose of this study is to give an insight into the subject and where more research needs to be done.

### 3.4.3 Semi-Structured interview

The study will present a qualitative semi-structured interview with a Swedish doctor. According to Gillham a semi-structured interview could be considered to be the most important type of research interview because it is more flexible yet structured, and it has the ability to provide good quality of data [26]. Semi-structured interviews are a time-consuming task, because of the work it takes to transcribe, analyse, and present the collected data, and the process to develop interview questions is a long phase, and it requires a certain practice and skill to achieve good results [26]. The preparations required are high and the interpretation and presentation of the collected interview material is considered essential [26]. An example of a main characteristics of a semi-structured interview is that the interview questions are
under constant development in order to secure their focus and relevance. Another is connected to the ability to ask with some flexibility the interviewee additional questions, it is possible that exploratory questions originate especially if the interviewer thinks there is more to be told or needs to be further explained [26].

3.4.4 Limitations of the research

There have only been conducted one single interview, which could be considered a limitation of this study. This is connected to the fact that it is difficult to get an interview with an expert in this field of work, which in this case is a doctor with years of experience and was connected to a medical platform that offers help from a digital doctor. Interviewing other people was considered yet was not a feasible option or an attainable one because of the limitations stated above. However, to enrich the study an internet-based interview was conducted with two other participants of the pilot-project which was done by email. They answered the same questions as the expert in the interview, yet they could supply the study with additional data regarding digital medical care. However, the limitation this form presented was in form of lack of follow-up questions, although email was used the follow-up questions were not the same as the expert interview in sense of being organic follow-up questions.

3.4.4 Validity

Gillham believes that the validity of an interview could be decided by how well an interviewer depict and represent what was said in an interview [26]. In addition to this Olsson et al. mention that validity occurs if there is a conformity with reality and interpretation [21]. Furthermore, they state that regardless of the view on reality the interpretation should be based on empirical data [21]. However, according to Trost the validity is one of the hardest tasks to establish, because you need to be able to convince the readers that the research findings of collected data is credible and reliable [27]. This is done by indicating that the data have been collected in a way that is considered genuine, honest and relevant to the problem statement. There should also be a reflection of the ethical aspects in connection with data collection [27].

3.5 Ethics

The code of conduct in this study follows the research ethical principles. There are four main ethical rules formulated by the Swedish Research Council, which are; (1) information requirement: the research must inform the participant the purpose of the study, (2) consent requirement: participant have the right to choose how much they want to contribute, (3) confidentiality requirement: personal data shall be kept confidential and personal data protected from unauthorized people (4) useful claim: collected data may only be used for research purposes [22].

The respondent was informed in advance the purpose of the interview and was emailed the questions, which would be asked in the interview. The participate could at any time refrain to answer a question or to end the interview if they wished without any questions. The respondent gave their consent in being voice recorded and then
transcribed. The transcription was then sent to the respondent where they had to give me their written consent to include and use in this study.
4. Results

This chapter presents the results of the study. First the results are presented by the literature study and then the results from the interview study.

4.1 Literature Study Results

In this chapter a result of related literature that have a correlation to the thesis of this study will be presented. The research questions are reported under each paragraph 4.1.1 – 4.1.3 to make easier to draw correlation between a study and the Research Questions. This is followed by findings of the overall process and flow in how to establish contact with a digital doctor in the pilot-project which is the study’s focal point. The literature result concludes with a short summary of the results from the literature.

4.1.1 Professional Medical Advice at your Fingertips

In a study made on the Chinese digital platform “Ask the doctor” (AtD) called Fenda the authors investigated the reasons why a patient seek online healthcare from a Chinese digital platform [16]. Fenda is a paid, free-market commercial platform which have over 600 medical professionals with 16 different specialities available. The authors studied the inquiries from healthcare seekers and identified behaviour patterns on why people seek help on an AtD platform and how patients interact with medical professionals on this platform.

*How does a digital doctor assess a patient’s symptom and what aids are used in the process?*

In this AtD platform a patient sends a text-based inquiry which is then evaluate by a medical professional who reply with a one-minute voice message. However, the answers provided by a medical professional are not a disease diagnosis and should not be viewed as such, the answers given should only be considered as a reference to the inquire made by a patient.

*What main benefits, drawbacks and risks are there when using a service that allows you to seek medical care and get in contact with a digital doctor?*

A drawback with traditional care which can be viewed as a benefit with an AtD service is connected to if a patient forgets to ask a question during their medical visit with a doctor. This is possible to rectify with the help of Fenda where a patient can ask their question at their own convenience and have a medical professional answer it. Another benefit with the commercial service Fenda is the ability to choose the respondents which is not possible in most AtD platforms, and it is considered less costly when compared to a traditional visit. The drawback and risk with this platform are connected to the fact that the answers given are not a diagnosis of a patient’s symptom, and a plausible risk could be that the patient view it as a diagnosis rather than a reference to a question.
4.1.2 Reasons for Consulting a Doctor on the Internet
In a study by Umefjord et al. [11] they identify reasons for consulting with a digital doctor instead of meeting them in person, where the authors conducted a Web Survey between November 1, 2001, and January 31, 2002. The response rate in total was 34% and the participants in the survey were (26%) men and (74%) female. The result of the study is based on a quantitative and qualitative analysis on the authors question “Why did you choose to ask a question at Infomedica’s ‘Ask the Doctor’ service?”.

How does a digital doctor assess a patient’s symptom and what aids are used in the process?
The article does not address how a doctor assess a patient’s symptom per say, however, it mentions that it is a text-based service where a patient can submit health related questions that answered by an experienced doctor within a span of 7 days. The aids used in the process is Information and Communication Technology (ICT) i.e. computers.

What main benefits, drawbacks and risks are there when using a service that allows you to seek medical care and get in contact with a digital doctor?
The result of this study present key reasons why patients choose to consult with doctor via an AtD service instead of seeking treatment the traditional way. The identified themes where: convenience (52%), anonymity (36%), “doctors too busy” (21%), difficult to find time to visit a doctor (16%), difficulty to get an appointment (13%), uncomfortable to meet a doctor in person (9%), not able to afford traditional care (3%) all these can be viewed as a beneficial aspect. Drawbacks and risks were not identified in this study.

4.1.3 The effectiveness of online healthcare platforms
In the study on “Improving the effectiveness of online healthcare platforms: An empirical study with multi-period patient-doctor consultation data” by Y. Yang, et al. [15] they examine the online consultation behaviours i.e. the interactions between patients and doctors and how this aspect can help improve online healthcare platforms and make them more efficient and effective. Insights presented were affiliated to how to enhance patient satisfaction such as response time, depth of interaction and overall service content during a first-time consultation using an AtD platform.

How does a digital doctor assess a patient’s symptom and what aids are used in the process?
A consultation starts with a patient contact a doctor by sending them a private message that states personal details and symptoms about them. This is followed by a doctor that assess the information supplied by the patient where they have the ability to ask for additional information to conclude their diagnosis and thus are able to offer advise e.g. self-care procedure. The doctor also assesses whether or not they are able to help the patient online or they need to seek a face-to-face consultation.
What main benefits, drawbacks and risks are there when using a service that allows you to seek medical care and get in contact with a digital doctor?

A benefit identified in this article is linked the ability to seek medical care remotely due to the fact that some people face geographical inconvenience when seeking care. The study also identified a drawback that concluded that if the interaction between a patient and a doctor lacked depth i.e. not enough information it could rendered the use of this service somewhat precarious.

4.1.4 State-of-Practice using Region Skane’s Digital Healthcare System

In this system there are several steps to be taken when establishing an appointment with a digital doctor, it all starts with the user of the system which in this case is the nurse who schedule in the digital meeting.

Figure 1
(This figure shows the overall process how to establish contact with a digital doctor. The picture is supplied by one of the participants in the Internet-based interview)

The process starts with a patient call or visit a healthcare centre where a nurse decides whether or not the patients fulfil the criteria and requirements for a digital meeting (see Figure 1). The patient is then offered a digital meeting that the nurse schedules at a free timeslot which usually is the same evening or the next evening depending on the patient’s symptoms. Then the nurse sends the patient a link to Doctrin which is a digital tool that lessens the administration work for health personnel (see Figure 2) [31]. In Doctrin the patient logs in with their bank identification number “bank-ID” and fill out an anamnesis.
When the patient has done this, the doctor reads and evaluates the patient’s symptoms which is followed by a written assessment of their symptoms and what might be ailing them. The doctor then documents in a tool called PMO (Project Management Office). The patient then receives a survey in the mail regarding the digital meeting.

Although this meeting is considered a digital meeting the meeting itself is referred to as an asynchronous meeting, where the doctor and the patient do not have to be online at the same time to communicate.

4.1.5 Summary of results from literature

The result of the literature is able to some degree answer Research Question 1: How does a digital doctor assess a patient’s symptom and what aids are used in the process? The aids used in the process are voice message and text-based communication i.e. computers in order to communicate digitally with a patient. When it comes to Research Question 2 the literature result was able to provide identified benefits, drawbacks and risks that other studies have identified when using an AtD service.
4.2 Interview Study Results
In this section the result of the expert interview and the answers from the Internet-based interview where two participants of the pilot-project have answered the same questions as the doctor in the expert interview. The result from the expert interview will be first be presented then the result from the Internet-based interview. The results are separated due to the forms that have been used, however, the answers will be assessed, analysed and discussed in chapter 5.

4.3 Presentation of Expert Interview Respondent
The person interviewed works in Sweden, and have an extensive knowledge working as a doctor. It is relevant to mention that this doctor has helped develop and worked on the pilot-project mentioned in the introduction.

4.4 Implementation of Expert Interview
The interview was conducted by telephone at a set time, and it started with a short introduction of the purpose of the interview and study, which then was followed by questions. The respondent was aware that the interview could take up to an hour, however, the total time of the interview was approximately 40 minutes long. The respondent gave their consent to be recorded and was sent the questions beforehand. The interview was recorded with two devices in case of technical failure, and a few notes were also taken when considered necessary e.g. keywords.

There are benefits as well as drawbacks with conducting a phone interview. The main benefit is that it is possible to conduct it when you are not able to meet in person. The main drawback is that it is not face-to-face, which means hints and visual modifications are not visible [26].

4.5 Identified Themes from Expert Interview
After a successful conducted interview, it is possible to present a few identified themes, which are presented below. All asked questions are not presented because not all of them are relevant, however, the full interview which originally was conducted in Swedish then translated to English is available (see Appendix 2). The excluded answers have merely served the purpose to present a background.

The main result of the interview was the interviewee’s experience and knowledge on the non-commercial pilot project and the purpose, benefits, drawbacks, and current limitations it has. The process to conclude how this particular system works and what it can offer patients and doctors was revealed during the expert semi-instructed interview, were a question could lead to a follow-up question or recall for further explanation.

The doctor expressed that there are certain benefits e.g. it is flexible, drawbacks e.g. not suitable for those how suffer from several ailments, and limitations e.g. it is not possible to seek medical treatment if the doctor needs to use the basic sense of ‘touch’ in their consultation with the patient.
4.5.1 The Significance of Symptom
The interview started with an introduction question; the reason and purpose behind the digital service by Region Skane. The interviewee answered that it was designed and created to offer an alternative way to seek medical care, and this could be done by offering a patient a digital visit with a doctor. This led the interview to the significance of symptom where a patient had to suffer from the right ailment to be offered a digital visit.

When asked to answer if it is harder to assess a patient’s symptom in digital meeting compared to a physical meeting, the interviewee answered that it depends on the patient’s symptom. It was stated that it takes years of experience to be able to assess a patient symptom accordingly “We as doctors have under a long period of time been taught what examinations require to assess a particular symptom”. It is not a suitable option if the doctor needs assess a patient’s general condition where they need to the human sense to touch e.g. squeeze or feel. It was also said that it becomes too complicated to help if the patient suffers from several ailments and thus it becomes difficult to treat the patient digitally.

In addition to this the doctor also brought up that not all symptoms are suitable for seeking digital care e.g. abdominal pain. During the pilot-project they have encountered patients with acute/ threatening abdominal symptoms that they have not been able to assess safely.

In order to assess a patient symptom, the expert said that it is still not possible to replace and compensate all of the human senses i.e. sight, hearing, smell, taste and touch in a digital meeting. Sight was the only sense in this service that could be replaced by photos. It was pointed out that this type of digital service does have its limitations especially if there is a need to touch or hear e.g. “listen to a patient’s lungs” to assess their ailment.

4.5.2 Aids used in a Digital Medical Meeting
There are different aids used in a digital visit one of them is the technical platform to which the doctors connect to in order to establish contact with the patient. This platform allows them to communicate and access a patient medical journal. Another technical tool they use is a medical history form i.e. anamnesis where the patient is presented with a smart question flow of approximately 20 to 25 questions. The other vital aid they use during a digital visit is their own head i.e. personal knowledge and expertise in order to diagnose a patient.

4.5.3 Benefits, Drawbacks and Risks
There are a few significant benefits that were mentioned by the expert and one of these where connected to the aspect of being accessible.
“They do not need to take time off work or school, they do not need to travel, and they do not need keep a certain time. This makes it more flexible for the patient, which I see as the biggest advantage”.

It is also considered to help patients who find it difficult to disclose embarrassing and sensitive ailments such as gender related diseases. A patient who suffers from a STD or have some other genital problems might find it easier to discuss and send pictures then meet in person.

When asked if there are any drawbacks, the doctor mentioned a few identified drawbacks they have noticed during the pilot-project which is connected to the fact that it excludes a lot of patients. For example, a patient with “a complicated disease background” are not suitable for the service and thus excluded.

The expert was also able to provide an identified risk which is connected to the eagerness of a doctor to solve a patient’s symptom/problem with an easy and quick assessment without having a conclusive basis to do so. The interviewee pointed out that it is important to be careful and it is significant to understand “what one can solve” without compromising a patient’s well-being.

4.5.4 Room for Improvement
After a completed interview it became evident that there are certain aspects of the digital system that could and should be improved, and one of these are the medical history form presented to the patient to fill out before establishing contact with a digital doctor:

“The medical history form could probably be improved although they are made with medical expertise. They might need to add a few questions and withdraw a few others”.

The interviewee also mentioned that they have encountered obstacles in their system in form of technical aspects e.g. issues with the connection.

To end the interview the expert and doctor was asked what their general opinion was on the emergence of digital medical care. The question was answered with a certain concern and scepticism in the rapid emergence of online medical services “on a commercial basis”. It was stated that it is important that these platforms evaluate what is appropriate and inappropriate to include in regard to symptom, and it is clear that commercial players value their profit interest in front of the patient’s safety.

4.6 Presentation of Respondents of the Internet-based interview
The people who answered the Internet-based interview was sent a replica of the expert interview questions. These two people have participated in the pilot-project and has experience and knowledge how the system works, which is why their answers are
considered valuable in this study. The age or gender is irrelevant to disclose because the main goal is only to gather information about Region Skane’s Digital Healthcare system.

4.7 Implementation of the Internet-Based interview
The Internet-based interview was sent by email to the participants and they were notified the purpose of the interview and how it would be used in this study. They were also informed that their answers would be anonymous and not contain information that would disclose personal information about them. The respondents gave their consent to have their answers presented in this study.

The main benefit using this type of form was it made it possible to gather more data that did not require all the pre-requirements that the expert interview required. The answers are considered valuable and significant because the respondents can answer from experience about the system. A drawback would be that some answers might not become as extensive as the answers from the expert interview.

4.8 Identified themes from the Internet-based interview
After reviewing the answers from this interview, it is plausible to present a result of identified themes connected to the research questions. The participants of the interview answered the questions that they had personal experience, and left questions that they had no knowledge of blank. Their answers have been translated, summarised, and contextualised which is presented below. The participants were able to answer the questions that will contribute the study with more empirical data to analyse and discuss in chapter 5.

The two participants in the internet-based interview the participants will be referred to throughout the text as Participant 1 (P1) and Participant 2 (P2) when discussing their individual experience and knowledge.

4.8.1 Digital Doctor help facilitate the Healthcare
The participants unanimously answered that the service is an alternative to the traditional way of seeking medical care, and they both pointed out that the service have the ability to relieve the healthcare by treating those with easier symptoms digitally then psychically. P1 gave an example on this and what would be considered an easier symptom: “Easier symptoms such as cumbersome reticulated cough that needs cough medicine or postpone menstruation”. Whereas P2 mentioned that by treating “easier symptoms” would ensue that patients that are “sicker” get the physical visits instead.

It was stated that a digital visit with a doctor facilitate good accessibility and faster service due to the digital service. According to P2 the service offers the benefit of “no waiting time” and is “easily accessible”. In addition to this P2 said that the service suitable for people who work because they “do not need to take time off work”.

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4.8.2 Drawbacks and Risks with the Service
They both said that the service only offers the digital visit to patients who fulfil the criteria set by the healthcare, which is restricted and thus considered a drawback.

P1 mentioned that throughout the project the criteria have changed during the pilot project, which is connected to discoveries that have been done what symptoms are suitable and less suitable for a digital meeting. Examples what a patient can currently seek digital treatment are; acne, sinus problems, diarrhea, erection problems, cold/flu, delaying menstruation, constipation, heartburn and acid reflux, coughing, skin rash, itchy mouth ulcers, nasal congestion, red eyes, motion sickness.

P1 also pointed out that there is a higher risk to miss and overlook a patient’s symptoms, which would be visible during a physical doctor visit. This is plausible because it is “Difficult to assess various disease via the network, as you cannot touch/feel, smell, listen to lungs/heart/abdomen”.

P2 said that a digital doctor appointment might not be suitable for elderly people because they might struggle with the technical aspect of the visit. This person also brought up that it is difficult transform and replace the human senses which is considered a drawback.

4.8.3 Discoveries made during the Pilot-Project
When it came to questions about discoveries that have been made while using this digital service, they disclosed different experiences and views on the matter. When comparing a traditional face-to-face medical consultation with a digital visit P1 pointed out that there are aspects in relation to a patient’s symptom could be intricate to assess during a digital visit. P1 stated that a “long experience and clinical work over many years within the healthcare is important to be able to ask the right questions, to be able to draw a conclusion.”

The aids used when scheduling in a patient for a digital doctor visit is their own personal experience in the field, however, they also 1117 facts and a triage manual in their decision process.
5 Analysis and Discussion

5.1 The Study’s Approach
The intention of this research was to examine the newly introduced system on establishing contact with a digital doctor through a platform. The relevance of this field of area relates to the emergence of this application and how people are now presented with an alternative when seeking medical care rather than the traditional way. The following sections will reveal findings of existing literature and expert interview, which then made it plausible to identify germane themes. This method is referred to as thematic analysis and the findings are structured into overall themes and in sub-themes. Furthermore, the exploratory approach was used as it is 'content-driven' and enables new insights into a new and emerging area in need of investigation, which helped to identify themes and ideas.

The following paragraphs analyse and discuss the results of the study based on the collected empirical data from the literature studies and interview. The identified themes from the data will be compared, discussed, and analysed with each other. This is done, in order to draw a conclusion whether or not digital medical care could be considered tantamount to seeking medical care the traditional way. Moreover, the reason for doing this is to answer the study’s research questions. This could help contribute with new information and identify what further research could be done on the subject.

The result of this study shows that there are a few key aspects that should be taken into consideration when seeking digital medical care with a digital doctor. This is evident when you analyse the empirical data collected and presented in this study. To further develop the result, one could include several interviews to gain a larger spectrum on the subject. However, previous literature and the expert interview result have provided enough material to analyse and discuss.

5.2 Analysis and Discussion in relation to the Theory and Result
Previous studies presented us with a few findings connected to the reason for the emergence of the platform: digital doctor. We found that the reason for contacting a digital doctor is connected to the aspects; flexibility, trust issues, sensitive afflictions, location, convenience (see e.g. [6, 11, 15]). Another study mention that the younger generations of patients might come to expect a digital alternative to seek medical care, and that it is connected to the fact that technology e.g. electronic devices are used on a daily basis [14]

The result from the expert interview concluded what the reasons were and this from a doctor’s point of view, which were similar to present study made on the subject. The interviewee discussed that the aspects flexibility, sensitive afflictions and location have a significant part in why this platform is considered an option for patients. However, the interviewee also pointed out the what the weaknesses are in this system, and aspects that are worth considering when using this service. For example,
it is not suitable for all patients depending on their medical history and current afflictions because some afflictions require that a doctor feel and squeeze. The service is suitable for patients who want medical advice on e.g. skin afflictions or venereal diseases, where they can photograph and send the picture which then will be evaluated by a doctor.

This digital service is new around the world and there are some countries that have conducted a few investigations on the subject. Therefore, it is interesting to analyse whether if Sweden have taken these studies in consideration before introducing the service on the Swedish market. The study has presented result that are from a Swedish doctor’s point of view on the system. This doctor has been involved in the soon to be released digital medical care system for people living in Skane, and is able to disclose what aspects that are considered beneficial and identified the drawbacks that exists within the system. When comparing present studies with the expert interview conducted in this study results show that the Sweden does seem to take other studies into consideration. However, they seem to evaluate and learn from the current available commercial services e.g. Kry and MinDoktor. The expert interview tells us that the non-commercial application has excluded the ability to use video in the digital meeting with a doctor, however, it is possible for a patient to send a picture if necessary. If this is connected to recent discoveries concerning security deficiencies is unknown.

Furthermore, the results from the literature study and expert interview both discuss benefits and drawbacks there are with using this kind of service, it was also noticeable that there are limitations and risks to contemplate and keep in mind.

5.2.1 Identified benefits
There are benefits with digital medical care that the previous research has identified. Several studies mention that it is an alternative to the traditional healthcare (see e.g. [6, 11, 14-15]).

The results from the literature study and interview both point out that some medical afflictions can be considered embarrassing and sensitive for a patient to seek treatment for, which is one of the main reasons why they choose to converse with a digital doctor rather than meeting a doctor in person. This was disclosed when asked if a patient have the ability to choose the gender of the doctor they are going to talk to, which is not an option in the non-commercial pilot-project. However, the doctor did disclose that patients find it easier to discuss afflictions they find embarrassing e.g. genital disorder.

The study “Reasons for Consulting a Doctor on the Internet” by Umefjord et al. is based on a web survey of patients who seek digital treatment, which means patients have had the opportunity to answer why they seek digital medical care. According to the result presented in this study patients found it convenient, anonymous, preferable when discussing sensitive afflictions, and then there were some who simply preferred to use written communication [11]. This was also an aspect the
interviewee mentioned during the interview: “In the case of sensitive symptoms such as STDs or the genitals... it is probably easier for some patients to use this digital service”.

The result is relevant when considering the reason for seeking digital medical care, and what advantages there are with this service. When comparing the results, it is evident that patients will use this digital platform, if they find it difficult to speak to a doctor about sensitive afflictions. This is not something likely to change because there will always be people who will find it difficult to divulge information, they find more sensitive and private.

Furthermore, it is interesting that the Chinese AtD platform Fenda allow their patients to choose the gender of their doctor, which probably is connected to whether or not a patient is comfortable discussing sensitive afflictions with the opposite gender [16]. This is perhaps an attribute worth consideration whether or not to include it in order to interest patient who refrain from using the application because it is not presently an option for them.

The flexibility aspect is brought up in several studies (see e.g., [6, 14-16] and in the expert interview that it is one of the main reasons the digital doctor service offers the patient. The patient does not have to take time of work or miss school in order to receive medical care, people who find the commute to a healthcare are now able to receive help from distance, nor need they” keep a certain time” according to the expert.

### 5.2.2 Identified drawbacks

Palen et al. mention that 25-70% patients who seek medical treatment do not need to meet the doctor face-to-face encounters depending on the symptom, this statement is based on previous studies [14].

According to Umefjord et al. there is the concern trust issue aspect that should be considered when using a digital consultation rather than a traditional one [11]. This is not an aspect that is mentioned as a drawback or risk in the interview. In the interview one of the identified drawbacks with non-commercial service is that it excludes patients with “complicated disease background”. A patient who suffers from multiple ailments is considered harder to help in a digital service, because the doctors in this service need to have an overall picture of the patient in order to help them. This aspect is not mentioned in the previous literature studies. Those patients are not considered the ‘right’ or ‘suitable’ patients for this digital service and should instead turn to the traditional way of seeking medical care.

In the interview it was possible to ask how a digital doctor assess a patient’s symptom and what aids they use in the process, where they according to the doctor rely on their own expertise and technical aids such as digital forms, pictures, and asynchronous communication. This is one aspect present study do not bring up, and it is not something the commercial services who offer a digital meeting with a doctor mention.
There are a few studies that discuss the security aspect and whether or not this digital service should be considered safe for the user i.e. the patient (see e.g. [3, 16-18]). In Sweden there have been grave security issues with the commercial service Kry, where children have been subjected to digital abuse by the digital doctor. They have been asked to submit videos that have been considered to violate the children, which raises the question whether or not these services should include videos and photographs [19-20]. The non-commercial service soon to be released have chosen to omit the ability to use videos and only makes it possible for patients to send in pictures for evaluation. If this have any correlation to what have been discovered is unknown.

5.2.3 Limitations and Risks
The literature study results also presented identified limitations and risks; however, the interview was able to present us with best result where there are significant limitations e.g. symptom and human sense related aspects. The interviewee does not think that this alternative method will become more, it should instead only be viewed as an alternative to seeking medical help.

There are studies that mention the vulnerability with digitalising information and how to protect it (see e.g. [2-3, 17]). Worth further investigation is if previous studies have helped improve current services based on the findings in regard to drawbacks and limitations. When things become digitalized it increases the chance that sensitive information is leaked or shared with an unauthorized people e.g. a patient journal.

However, should it not be considered better and safer for a patient who suffers from an infection or a virus to get digital help to reduce the risk of spreading their disease, which is easily done when sitting in a waiting room or during the transportation to a medical healthcare.

5.3 Expert Interview versus Internet-based Interview
In this section the result from both the expert and Internet-based interview will be compared and discussed i.e. what the doctor and the two nurses have experienced while working with the digital service. All in all, they answered quite similar when they addressed the benefits and drawbacks with a digital visit, and when it came to the question if a digital meeting could be considered tantamount to a traditional physical meeting, they agreed that there are obstacles hinders this.

All participants agreed that there are a couple of positive aspects by providing a patient with a digital visit instead of a physical one. For example, a patient can stay in the comfort of their home and receive treatment from a doctor, which help those who have difficulties to travel or have a difficult time to take time of work. P2 brought up the fact that by using a digital service could mean that “sicker” patients get the physical visits instead of those who suffers from an “easier” symptom. The doctor also pointed out that patients who seek treatment for embarrassing and sensitive ailments are more prone to use a digital service instead of a physical meeting.
The participants were able to mention some drawbacks, risks and limitations with a digital visit and how this effect the patient. The doctor stated that one of the main drawbacks was connected to a patient’s symptom and medical history. The service is very symptom restricted and is thus rendered less useful in situations where a doctor must for example listen to a patient’s lungs or feel their abdomen to assess their ailment. Furthermore, a patient who suffers from several ailments our have a complicated medical history are not offered a digital visit with a doctor. The nurses P1 and P2 were also able to identify some significant risks e.g. the service might be too complicated for elderly to use in practice.

All participants agreed that there a few recognisable traits that hinders the service to fulfil the standard a traditional meeting offers which is mainly connected to the human senses: sight, hearing, smell, taste and touch and it is still not possible to substitute all these senses with today’s technology.
6 Conclusion

The purpose was to gain knowledge if a digital doctor can help a patient as well as a physical one. When using technology some key aspects are stripped and neglected in order to accomplish certain things. In this case it is at the expense of the basic human senses. The study has shown that it is possible to conduct a meeting with a digital doctor, however, it has also shown that this sort of treatment is fairly limited to what they can do. There have been done research that consider the benefits and drawbacks. The available medical applications should be more honest when it comes to what expectations you can have on a digital doctor, and what symptoms they can actually help you with. It became evident with the help of previous literature and conducted interview that there are both benefits and drawbacks with seeking digital medical care. The service can be used if you suffer from some banal affliction, where the risk of giving a patient the wrong diagnosis is diminutive.

Yet, I could not find any previous studies that consider the fact that with technology we are stripped of the most human basic which are our senses. The ability to touch is a vital part in a traditional examination. A doctor must at times touch the patient to be able to diagnose a patient. At present there are some aids that help the digital doctor, however, as mentioned in the analysis and discussion it is not yet possible to compensate the loss of some of the human basic senses for example, smell and touch. It is evident based on the lack of research that the newly emerged digital doctor should be investigate and evaluated to a greater extent in order to establish whether or not the system should be considered a friend or foe.

6.1 Further research

There need to be done more investigation in how a patient’s safety can be ensured and what tactics that can help facilitate this. In addition to this there should be done a study if and how new needs have emerged due to the ability to contact a digital doctor, and if such needs will create a new behaviour and new expectations. Moreover, will such behaviour lead to an over consummation of digital healthcare, and if so, what would be the result of such behaviour and what will it lead to.
References


https://himolde.brage.unit.no/himolde-


Appendix 1

Clean template with questions asked in Expert Interview and Survey
Date: 190402

Purpose

What is the purpose of the service?
Who is the target group?
What can a patient seek care for?
What criteria must a patient fulfil when seeking digital medical care?

Benefits and Drawbacks

What benefits do you see with digital care?
What drawbacks do you see with digital care?
What risks do you see with digital care?

The Digital Meeting

What obstacles have you encountered in a digital meeting?
What can be improved?
What is the feedback from the patients regarding their experience with digital care?
Can the patient choose whether to talk to a female or male doctor?

Discoveries

In a traditional medical consultation face-to-face, the doctor can use the senses:
hearing, vision, smell and touch during the examination. Is it possible to replace
these senses in a digital meeting?

Where is the boundary between physical and digital medical care?
Is it harder in digital care to assess a patient’s symptom compared to a physical
meeting?
What aids are used in digital medical care when assessing symptoms?

Security

How can a patient be sure that they are talking with a licensed doctor with sufficient
competence during a digital consultation?
Is the system considered safe?
How do you secure a service like this from unauthorized people?

Technical Aspects

Is the system easy to use?
Who solves the technical problems?
Appendix 2
Filled template with Interview Answers
Telefonintervju den 2 april 2019
Efter en kort introduktion startar intervjun.
Läkaren är medveten om vilka frågor som kommer att ställas under intervjun då de skickades via mail.

I - Intervjuare
K - Korrespondent

I- Vi börjar lite lått. Vad är syftet med tjänsten?
I- Okej.
K- Och detta har vi valt då att ha utanför kontorstid på kvällarna. Så det är att utvärdera vad vi kan utträta med den här typen av upplägg och vad vårdgivarna tycker och vad patienterna tycker - i princip så är det målsättningen.
I- Så där är inga bilder eller något sådant som skickas då?
K- Det går att bifoga stillbilder.
I- Stillbilder, okej. Vem är er målgrupp?
K- Jo, målgruppen är... Det finns ett antal kriterier som dom måste uppfylla. Dels är det då ett antal fördefinierade symptom som vi har på förhand och med tidigare andra aktörer erfarenheter valt ut, och sedan är det då åldersgrupperna. Det är dels 3 till 12 år och dels är det från 18 år och uppåt. Och att vi har uteslutit dom här tonåringarna beror på det juridiska att dom kan och får inte läsa sin journal och föräldrarna får inte i heller läsa deras journal.
I- Okej.
K- Så det har med det juridiska spörsmålet att göra. Och sen måste det vara en skåning, patienten måste behårsa svenska någorlunda så de kan svara på frågor och dom måste ha bankID och de måste ha tillgång till någon sorts digitalt medium alltså padda, telefon eller dator för att kunna göra det här.
I- Okej.
K- Så det är princip det vi har som ingång och så har vi då i vårt projekt att digitala möten bokas in av en sköterska på 1177.
I- Okej, så man kan boka in möte via 1177.
I- Okej, så du sa att ni hade kriterier ni följer och så, då kan inte en patient söka för vad som helst?
K- Nej.
I: Är det något ni lägger ut "dessa kriterier måste ni uppfylla" eller hur ser det ut för er?
K: Nej, alltså det är sköterskan som bokar in ett möte som har dom kriterierna framför sig och det är hon som måste ta ställning till om kriterierna uppfylls.
I: Okej, sköterskan.
K: Ja, så vi har inte på nått sått marknadsfört denna tjänst då det är ett projekt och det är en begränsad skara och patienterna måste komma in i ganska smala kanaler så att det inte är marknadsfört utåt.
I: Okej, nej, då skiljer den sig från de andra tjänsterna som finns.
K: Det kan man säga. Detta är i projektform.
I: Så vilka fördelar ser du med att använda sig av en tjänst som digitalvård?
K: Jag tror de stora fördelarna är för patienten att dom slipper att ta ledigt från jobb eller skola dom slipper åka någonstans och dom slipper hålla en viss tid. Så att det blir en flexibilitet från patientens sida som jag ser som den stora fördelen. Och från oss doktorer vi har ju det här projektet att jobba hemifrån med uppkoppling och det är väl en fördel för oss också att det är lite flexibelt sätt att arbeta. Där man själv kan bestamma litegrann när man ska jobba och man behöver inte sitta bunden med datorn utan som sagt när patienten loggar in kan man själv logga in när man tycker att man har möjlighet och tid inom det intervallet vi har bestämt.
I: Okej, så det är mest ur det perspektivet att det är flexibelt?
K: Ja, det tycker jag.
I: Nackdelar då?
I: Kan du ge exempel på det?
K: Ja, alltså multisjuka patienter som har flera åkommor och kanske om de vill söka för någon åkommna som kan ha förbindelse med en kronisk sjukdom. Då passar inte detta för man måste ha en helhetsbild av patienten och man måste kanske dessutom ha hjälp i större utsträckning av provtagningar. Det kan vi förvisso använda oss av i denna formen men ska patienten ändå ta sig fysiskt möte någonstans så ser vi litegrann att man förlorar vitsen med det här mötet för då sparar man ändå inte in så mycket. Utan det här lämpar sig till så som vi har valt ut efter symptom, så är det framförallt i grunden friska patienter som har ett medicinskt hänseende ofta en rätt banal åkommna.
I: Okej, finns det några risker?

I- Vad skulle du säga går gränsen mellan fysisk och digital vård?

I- Och detta beslutet tar sjuksköterskan som bokar in mötet då med en läkare? Det är deras ansvar?

I- Skulle du säga att det är svårare att bedöma symptom i ett digitalt möte jämfört med ett fysiskt möte?
K- Det kan man ju säga att det är att vi inte har riktigt samma tillgång till all fakta men å andra sidan är ju symptomen utvalda med denna utgångspunkt. Om patienten har ett annat symptom kan det vara betydligt svårare än om det är något av de utvalda symptomen.

I- Kan du ge något exempel på det?
K- Då jag tycker det är för svårt?
I- Ja.
K- Ja, det kan ju vara så om patienten har lite mera akuta allvarliga symptom tex att patienten har anänd som det kan gömma sig en allvarligare sjukdom eller buksmärtor. Det har vi egentligen inte med i vår tjänst, men ibland kan patienterna gå in i ett sidosymptom där det kommer fram att dom har egentligen ont i magen och då får man fixa ett fysiskt besök till dom.

I- Okej, vilka hjälpmedel används inom digitalvård?
systemet. Så när jag loggar in på en patient så kommer jag att få en kondenserad rapport av patientens sjukdomshistoria utifrån dom svaren dom har angett.
I- Okej, har ni stött på några hinder genom detta då?
K- Tekniska hinder menar du?
I- Ja.
K- Ja, ibland, men det har varit ganska stabilt rätt tekniskt kan man säga. Det har varit lite bekymmer med uppkopplingen hemma och sånt där men det har inte så mycket med tjänsten att göra utan mer med den tekniska plattformen som regionen använder. Sedan har det varit så att vissa patienter hoppar över en del frågor i det här formuläret, och övervägande kan man nog säga att vi har fått en bra beskrivning av patientens symptom utifrån det här formuläret. Det är ju annars så att i ett vanligt fysiskt møte ställer vi dom här frågorna muntligt men i den här tjänsten så får patienterna svara på dom innan.
I- Vad tycker du kan förbättras då?
K- Ja, det är ju en bra fråga. Vad kan förbättras... Ja, de här anamnesformulären kan säkert spetsats till även om dom är ju gjorda med medicinsk expertis. Dom behöver kanske lägga till en del frågor och dra ifrån en del andra. Det som vi har som är ganska unikt i vårt projekt är att patienten vid on-boarding, alltså när de loggar in, måste godkänna GDPR och även godkänna att vi går in i deras journaler och tittar. Så vi har alltså full access till deras vanliga primärvårdsjournal och till deras sjukhusjournaler. Det har inte så många andra digitala aktörer. Vi kan ju gå in och få en bild om de har sökt för den här symptomen tidigare och om de har andra sjukdomar som kan spela in, och vad de har för läkemedel etc. Så det har varit en stor fördel och vi dokumenterar även i patientens vanliga primärvårdsjournal så att deras egna, ”de vanliga vårdgivarna”, kan se när vi har varit inne. Det kan man inte göra om man har varit inne på Kry eller MinDoktor deras kontakter syns inte i den vanliga journalen.
I- Okej.
K- Så ja vad kan förbättras... Ja, jag tror också att man kan slippa på ett antal symptom som vi kunde ytterligare ta med och en del av dom symptom som vi har haft med tycker vi inte är så lämpliga.
I- Okej, kan du ge något exempel på det?
K- Exempel på symptom som vi inte vill ha med?
I- Ja.
I- Okej, vad tycker ni att ni kan lägga till då?
K- Ja, det har varit uppe med till exempel mask - springmask hos småbarn. Det bedömer vi ofta på telefon på en vårdcentral så det skulle vi kunna ta med.
I- Har ni fått någon feedback från era användare/patienten angående deras upplevelse?
I- Okej. Hur kan användaren känna trygghet att det är en legitimerad läkare och med tillräcklig kompetens?
K- Ja, dom kan väl inte känna mer trygghet än vad de kan göra i den fysiska vården. Hur kan du vara säker på att den doktor du kommer till på en vårdcentral kan sina saker. Ja, det kan du ju aldrig vara egentligen. Nej, alltså jag skulle vilja säga att: nej du kan nog vara lika säker här eller lika osäker som i en vanlig fysisk tjänst. Det står vilka vi är och patienten får veta vad vi heter, vad vi har för kompetens och att vi är specialistläkare i allmänmedicin allihopa. Vi är alla erfarna specialister i den här tjänsten, vilket det inte alltid är i de kommersiella nätläkartjänsterna där det ibland bara är legitimerade läkare. Jag kan nog säga att det är precis som en vanlig fysisk tjänst att om inte patienten grottar ner sig och tittar i läkarmatrikeln, så kan dom inte vara mer säkra än vad de kan vara om de går till en vårdcentral.
I- Okej. Du tror inte det blir lättare för någon via en digital tjänst ändra om dom är behöriga eller inte? Jämfört med om de skulle vara på plats som fysisk läkare?
I- Okej. Kan en patient få lov att välja om de får lov att prata med en kvinnlig eller manlig läkare?
K- Nej, det kan dom inte.
I- Nej, okej. Har ni fått någon feedback på det? Vad de tycker om detta?
K- Inte vad jag har hört.
I- Inte vad du har hört.
I- Okej, så du skulle vilja säga att det kan räknas som en fördel för patienten?
K- Ja, jag tror nog att vissa patienter kan uppleva att det till en fördel just med sådana sjukdomar som man kan tycka är lite skämna.
I- Okej. Är det någonting ni hade kunnat tänka er att lägga till att man får lov att välja att prata med en manlig eller kvinnlig läkare? Att valet finns där?
I- Okej, ja, och säkerhetsperspektivet. Upplever du att systemet är säkert?
K- Hur menar du då? Tekniska?
I- Ja, tekniska, sekretessbelagda uppgifter allt inom den tekniska världen.
K- Ja, där får jag ju lita på de tekniska expertis som vi har knuten till projektet. Likaväl som jag gör i min dagliga journal när jag sitter och knappar in en elektronisk journal så får jag väl säga att det är det samma säkerhet i en vanlig
journal. Det får jag utgå i alla fall från som doktor. Själv har jag inte det tekniska kunnandet. Men jag kan säga att det finns stort fokus på datasäkerhet, i synnerhet efter skandalen på transportstyrelsen för ett tag sedan.

I- Okej.

K- Det har gjorts en jätte analys med livrem och hängsle när det gäller säkerhet. Efter just den skandalen så att många/dom är väldigt försiktiga.

I- Okej, tycker du att systemet är lättanvänt då?

K- Nej, det är en del med integrationen mellan den tekniska plattformen och vårt journalsystem som inte är optimal. Men det är på grund av att vi inte har kunnat lägga så mycket pengar på det. Till exempel när vi skall föra över ett foto till patientjournalen så måst vi klippa och klistra manuellt.

I- Okej, vad är din generella uppfattning om digital läkarvård? Om du inte ser till pilotprojektet ni har gjort nu utan digital läkarvård i Sverige?

K- Ja, det skulle man kunna hålla en stor lada om. Jag är ju kritisk till den snabba framväxten av nätläkartjänster på kommersiell bas utan att man först testat fram vad som är lämpligt och olämpligt att ta med för symptom. Vi har ju gått in med det här att vi tycker vi vill utgöra en mera seriös alternativ och prova oss fram vad är lämpligt. Samt försöka ta reda på riskerna. Och framförallt har man ju kansna det att det är för mycket profitintresse som har varit fokus för de kommersiella aktörerna och vissa av dem har ju erkänt att det finns för lite forskning på det här området och då kanska man ska börja i lite försiktig skala och se hur man kan utveckla den och inte börja i en jättestor skala som man har gjort för att i efterhand kanske konstatera vad som var olämpligt eller riskfyllt.

I- Okej.

K- Och framförallt en stor hake eller klo i vårt projekt är också att vi bara har triagerade besök. Vem som helst kan alltså inte gå in med en banal åkomma och få en läkarkontakt som man kan i de flesta andra tjänsterna där det inte finns en selektion innan man kommer till en läkarbedömning. I vårt system är det så att man måste / skötornska /det sa jag nog inte att skötornska måste när dom väljer att boka ett digitalt besök så han dom redan gått in i ett beslutstöd där dom också ställer ett antal frågor till patienterna och utifrån deras beslut så ska den här patienten alltså i normala fall om inte den här digitala tjänsten hade funnits skulle dom ha fått ett fysiskt läkarbesök. Så har dom ett bekymmer som skötorskans anser kan klaras av med egenvårdsråd så kommer dom aldrig till oss i detta systemet utan det här ersätter ett fysiskt läkarbesök. Det glömde jag säga, vilket är en viktig poäng när det gäller kriterierna att det inte får vara vilket banalt bekymmer som helst. Utan det ska i dom fall vi ha haft ersätta ett vanligt besök.

I- Kan du ge exempel på vad du tycker är banalt?

K- Ja, det vanligaste är kanske en luftvägsinfektion. Om skötornska genom att ställa relevanta frågor kommer fram till att det inte finns misstanke om någon allvarlig åkomma så får patienten egenvårdsråd. En patient som alltså inte bedöms behöva ett fysiskt besök skall heller inte bokas in digitalt.

I- Okej. Tror du sådan här digital läkarvård kommer ta över dom fysiska mötena alltså bli större än de fysiska mötena?

I- Nej, okej. Men då har jag fått svar på mina frågor om det inte är något annat du tycker är viktigt att jag tar med.
I- Okej, tror du det kommer att ändras nu när ni släpper er tjänst i juni, du sa det var juni va?
K- Ja, den första juni preliminärt. Ja, då kommer man förmodligen att börja i mindre skala och expandera efterhand beroende på efterfrågan. Rimligen kommer man då att marknadsföra tjänsten på ett annorlunda sätt än vad vi gjort
I- Ja, det verkar vara en skillnad på hur ni marknadsför er tjänst och hur till exempel MinDoktor marknadsför deras.
K- Ja, jag hoppas verkligen att Region Skåne blir mer seriös i sin marknadsföring. Vissa kommersiella nätläkartjänster har använt en häpnadsväckande oseriös reklam vilket många av oss som normalt är verksamma i den traditionella vården upplevt provocerande.