

The Rising Importance of e-Health in Norway

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Abstract. Drawing on three central sources of data on the development in e-health use in Norway (studies from the Norwegian Centre for e-Health Research, studies from Statistics Norway, and the Tromsø 7 Study), we describe the rising importance of e-health. Originally restricted to a limited use within the health services, in recent years the use of e-health has gained momentum both in the general population and within the traditional health services, as the Internet has offered easy access to health information as well as a range of other health-related services.

Keywords. E-health, statistics, population-based studies, Norway

1. Introduction

The importance of e-health to individuals and to health services is rising rapidly worldwide as well as in Norway [1-3]. The Covid pandemic has further strained health services in many countries already struggling with the demands of an increasingly elderly population. In addition to the obvious advantage of reducing person contact during an epidemic, e-health can increase access to services – which may be especially important concerning remote and otherwise underserved populations. Improving patient engagement by focusing on the preventative aspects of life-style changes is also an important feature of many e-health services, which also may alleviate the burden on strained traditional health services.

Even before most Norwegians had easy access to the Internet, telemedicine and e-health played a small but important role in the Norwegian health services [4]. The role of telemedicine and e-health was especially important in the more remote and sparsely populated parts of Norway, which had less access to specialized hospital-based services [4]. In addition to videoconferencing, the remote assessment of, for instance, electrocardiograms, retinal scans, x-rays, and pathology samples, have long been important for the health services in the more peripheral parts of the country [4].

As Norwegians have gained access to the Internet and smartphones have become commonplace, new services have been developed. While the most frequent e-health activity has been searching for health information online, other Internet-based services have recently become increasingly important [5].

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In this paper, we will draw on three sources of data on e-health use development in Norway and discuss major developments in the use of e-health in Norway.

2. Methods

We briefly present and discuss data from three central sources on the development of e-health use in Norway; studies that have been performed by the Norwegian Centre for e-Health Research [6-8], studies conducted by Statistics Norway [9] and the population-based Tromsø 7 study [4,10].

The Norwegian Centre for e-Health Research carried out a series of surveys on e-health use in the Norwegian population during the first two decades of the millennium, including in 2000, 2001, 2003, 2005, 2007, and 2013 [6-8]. These surveys were performed on statistically representative samples of ca. 1000 respondents from the general population and carried out with the help of computer-assisted telephone interviews [6-8].

The Norwegian statistics agency, Statistics Norway, has since 2006 performed regular surveys to examine the use of e-health in the Norwegian population. These surveys have been based on statistically representative samples of 2000 respondents [9].

The third source of information regarding the use of e-health in Norway is the most recent (7th) version of the population-based Tromsø Survey. This survey included people aged 40 or above living in Tromsø, a city of approximately 70,000 inhabitants, located in North Norway [10]. This study was conducted in 2015-2016, and involved 18,497 respondents, which was 65% of those invited. In addition to completing questionnaires (including on the use of e-health), the participants were subjected to a range of lab tests and physical examinations at a study-center [10].

3. Results

The Norwegian Centre for E-health Research has performed a number of surveys on the use of e-health in Norway. In some of the earlier studies from the beginning of the millennium, the use of the Internet for health purposes was low compared to present day figures. For instance, in 2000, 19% of the population used the Internet for health purposes, increasing to 31% in 2001 and 33% in 2002 [6]. However, there was a sharp increase in this period, and a more extensive European study including Norwegian respondents showed that the use of the Internet for health purposes rose to 59% in 2007 [7], and a few years later, in 2013, 78% of Norwegians had used the Internet for health purposes [8].

While the studies from Statistics Norway have yielded slightly lower figures than those from the Norwegian Centre for e-Health Research, the number of people that have used the internet to search for health-related information has increased similarly steeply, from 33% in 2006 to 76% in 2021 [9].

A recent version of the survey from Statistics Norway has also demonstrated that the use of online health services has expanded beyond information-seeking. For instance, in 2020, 41% used the Internet to gain access to their personal health information (read their medical record online), 33% made doctors' appointments online, and 28% used other health-related Internet-based services [9].

A main finding in the Tromsø 7 study was that as many as 52.7% of the population 40 years and older had used the Internet for health purposes during the last year [10]. Searching the Internet for health information was still the most frequent e-health activity – and 49.2% (10106/20252) had used search engines like Google for this purpose. However, other types of online services are gaining ground, and 13.5% (2687/19926) had used apps in the last year for information and advice on health and disease issues, 7.3% (1421/19481) had used social media like Facebook for these purposes, and 5% (969/19418) had used video services such as YouTube [4].

4. Discussion

The three data sources, the Norwegian Centre for e-Health Research-based studies [6-8], the studies from Statistics Norway [9], and the Tromsø 7 study [4,10], all show that e-health now is widely used in the general population in Norway. E-health use has developed over the last two decades, as the Internet gradually has become more accessible to more people, especially with the spread of smartphones. In parallel, a range of e-health services have been developed. More recently, apps, social media and video have taken their place in the realm of e-health.

The data show that the general use of the Internet for health purposes is now quite high in Norway. Compared to other European countries, Norway and the other Nordic countries have among the highest e-health usage [7,11,12]. However, the use of e-health in Norway is still mainly for obtaining information about health and illness. Googling symptoms as part of a decision-making process regarding whether to see a health professional is commonplace. If the process results in a doctor's visit, the information obtained from the Internet may be a central, although not necessarily outspoken, factor in the consultation [13]. Internet searches involving lifestyle advice, including exercise and dieting, are popular as is advice relating to complementary and alternative medicine. While the Internet is a very useful source of health-related information for most, some users experience challenges related to, for instance, inadequate searching abilities, trouble separating low-quality, erroneous or biased information from high quality information, misunderstanding information, too much information, or not being able to utilize the information [14].

Some of the e-health services widely implemented within the established public Norwegian health services are electronic health records (often also accessible by patients), videoconferencing for meetings and consultations (both within primary care and in hospital-based services), electronic prescriptions, and the online booking of consultations.

As technology develops, new types of e-health services are gaining ground. Many such services are marketed directly to consumers without any connection to the public or private health services (typically based on mobile apps or web-pages), and there is no overall system in place for quality assurance or for making use of the data in the health services. Other services have been developed by the health services themselves or in partnerships, and have become better integrated into the daily work in the health services.

Some treatments, especially within the behavioral field, are now available completely or in part as e-health interventions. While not yet widely available within the public health services, these and other innovations are likely to play an increasing part in health care in Norway in the future.

The three types of studies discussed here are all methodologically sound and have all been based on relatively large, statistically representative samples. One methodological difference between the studies is that those from Norwegian Centre for e-Health Research and Statistics Norway are based on phone-surveys, which was not the case with the Tromsø 7 study. While phone-based surveys can give a good indication of the use of e-health, these surveys may have a methodological weakness in that there are many who refuse to participate – which means that the sampling of the participants may be biased towards certain groups of people. Another difference is that whereas the studies from Norwegian Centre for e-Health Research and Statistics Norway had made a random stratified selection of people from the adult Norwegian population in general, the Tromsø 7 study invited all inhabitants of the municipality of Tromsø in the surveyed age range (40 years or more) to participate, and a large part [65%] did so.

The latest figures in the Norwegian Centre for e-Health Research-studies [8] (78%) and Statistics Norway [9] (76%) are therefore not directly comparable to the figure from the Tromsø 7 study [4] (52%), as the first two include all adult age groups and the latter only those 40 or above. We know that age is one of the main variables influencing the use of e-health [10], and middle aged are approximately four times as likely to use the Internet for health purposes as senior citizens [10]. One main advantage of the study design of large population-based surveys such as the Tromsø Studies is that a large amount of data is sampled from a high number of people. This gives high statistical power, allowing for the opportunity to examine the importance of variables that other designs might not.

Other important and statistically significant predictors of e-health use are gender (women use more), marital status (single use more), educational level (highly educated use more), income (high earners use more), chronic illness and disability (the ill and disabled use more), and consulting the GP in the last year (use more) [10]. Conversely, some groups have a low use of e-health, possibly because of a lower interest in the topic in general. However, some groups – such as the oldest or most ill – may not be able to use the Internet or find it too difficult to use. Others may be unaware of these services or may simply not trust them. There still exists a ‘digital divide’ in e-health in Norway. However, this concept does no longer relate to physical access to the Internet. Today, almost all Norwegians have physical access through their smartphones, pads and computers. Instead, the present day digital divide relates primarily to a choice made not to use the available technologies.

5. Conclusions

The use of e-health in Norway has been increasing during the last two decades. Today, most of the population – including a large part of the elderly population- use e-health services. While using search engines to find information about health and illness remains the most frequent e-health activity, apps, social media, and video are becoming more important sources. Moreover, technological innovations as well as increased use of e-health within the public health services are paving the way for the even more widespread use of e-health in the future.

The Covid-19 pandemic has increased the interest in and use of e-health technologies in Norway and around the world. The importance of e-health to people in general and to the health services is likely to increase further as users are becoming more accustomed to and discovering the benefits of e-health.

E-health services that draw on important qualities such as ease of access, patient-centeredness, and the best outcomes from the patients' perspective, may, in line with the concepts around value-based health care, be strongly suited for our future health care [15].

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