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Governance structures impact on eHealth



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KEYWORDS

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eHealth;
Interoperability;
Denmark

Abstract

Background: National eHealth implementation efforts need to move beyond the scope of making technology the primary focus and instead consider the broader spectrum of influences that can either hinder or facilitate eHealth adoption such as governance structures and policies. In this study, Denmark serves as an ideal candidate for further examination due to the country's rich history of intertwining events that have played an important role in the dynamic relationship between governance and eHealth success and failures.

Methods: A case study approach was used to gather a combination of primary and secondary data sources. All data collection was carried out through desk-research. Data collection relied on performing an extensive search of literature for relevant studies using combinations of keywords that reflected eHealth and governance-related topics. Inclusion and exclusion criteria's were applied to identify relevant papers.

Results: This study reveals that despite Denmark's high deployment of eHealth technologies, the Danish healthcare system faces significant interoperability challenges which stem from the country's decentralized and centralized approach to eHealth implementation.

Conclusion: Structural reforms, policies and the processes driving the rapid dissemination of eHealth have a combined influence on the overall progress of eHealth adoption. Successful national eHealth implementation requires that countries act sensitive to the dynamics of governance, and specifically strive for the right balance between centralization and decentralization to nurture synergy and transparency between all stakeholders involved in the dissemination of eHealth systems.

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Introduction

Over the last years, eHealth has gained significant momentum in Europe. In this paper, eHealth is defined as “the use of ICT

in health products, services and processes combined with organizational change in healthcare systems and new skills, in order to improve health of citizens, efficiency and productivity in healthcare delivery, and the economic and social value of health.” [1]. eHealth includes a broad array of health-related information and communication technologies (ICT) such as electronic health records, electronic prescribing systems, health information exchange systems and clinical decision

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support systems. Several studies have indicated that the use of eHealth technologies can lead to potential benefits in improving the quality and delivery of healthcare services, enhancing cost savings, increasing revenue, facilitating patient safety, reducing waiting times and create greater patient engagement during the course of their care [2-6].

In Europe, the European Union (EU) has endeavored to promote the implementation of eHealth within the 28 Member States by making eHealth a key part of EU health policy [1,7,8]. The long-term vision of the EU is to achieve the widespread adoption of interoperable eHealth systems across Europe as part of the EU's Flagship initiative 'Digital Agenda for Europe' [9-11]. The 2004 EU eHealth Action Plan was the first initiative that set in motion the EU's plans to encourage European co-operation on healthcare issues [12]. Although Member States have made some progress in the integration of eHealth services since the launch of the 2004 Action Plan, several challenges remain that are hindering the EU from reaching their goal. This includes: the digital divide between Member States [13]; significant variations in terms of level of eHealth integration between countries [14]; differences between healthcare systems [15]; and legal hurdles associated with interoperable systems for cross-border health information exchange [16].

Despite these concerns, the EU Commission remains committed to their vision and launched a second eHealth Action Plan with a stronger emphasis on accelerating the widespread implementation and adoption of eHealth and interoperability of eHealth services [1]. The EU Task Force on eHealth, a group assigned to assess the role of ICT in health and social care and to suggest ways for ICT to speed up innovation in healthcare, published a report recommending the formation of a 'beacon group'. The group would consist of eHealth leading countries and regions who are able to provide leadership and inspiration for other countries [17]. The report further suggested that the countries who could take on leadership roles include Denmark, Sweden, Estonia and Spain. Of these countries, Denmark is widely regarded as the frontrunner in terms of countrywide eHealth usage. For example, Denmark has a high level of eHealth deployment and usage amongst general practices [18], hospitals [19] and patients [20]. However, contrary to the results of these studies, the country has a history of struggling in terms of achieving interoperability between eHealth systems, and the healthcare system is often met with dissatisfaction by healthcare professionals and patients [21]. Fragmentation is an ongoing issue due to discords in the planning, managing and cooperation of responsibilities between government stakeholders [22]. This implies that national eHealth implementation efforts need to move beyond the scope of making technology the primary focus when it comes to implementation efforts and instead consider the broader spectrum of influences that can either hinder or facilitate eHealth adoption such as governance structures and policies [23,24].

In light of this, Denmark serves as an ideal candidate for further examination. Within the past 15 years, the country's healthcare system has undergone several significant changes due to the combination of a major structural reform, launch of five national IT strategies and extensive diffusion of eHealth across the health sector. This rich history of intertwining events have played an important role in the

dynamic relationship between governance and Denmark's eHealth success and failures. Performing a case study of eHealth in Denmark can help provide us with valuable knowledge-transfer lessons and help guide other countries towards more efficient governance structures through reforms, policy-making in order to avoid the pitfalls associated with the challenges of national eHealth implementation and adoption [25].

The objective of this study is to evaluate Denmark's journey towards becoming an eHealth driven healthcare system in light of the changing political factors that took place during the periods of significant national eHealth implementation and adoption efforts. Specifically, this study will: (a) provide an overview of eHealth in Denmark; (b) examine the impact of the relevant governance-related that influenced the Danish health sector; and (c) analyze how eHealth and governance influences national eHealth implementation and adoption.

This paper is structured as follows. First, the methodological approach used for the data source collection and selection is described. Second, an overview of the key findings in relation to study objectives is presented. Third, the findings is discussed along with implications for other countries. Finally, the paper concludes with an overview of the results and observations from this study.

Methods

Data sources

A case study approach was used to gather a combination of primary and secondary data sources. All data collection was carried out through desk-research. The primary data collection relied on performing an extensive search of literature from 2000-September 2014 using Medline, Pubmed, Scopus, ACM Digital Library and Google Scholar for relevant studies using combinations of keywords that reflected eHealth and governance-related topics. The search strategy included using the search terms: eHealth, health information technology, health information exchange, electronic patient records, electronic health records, electronic medical records, telemedicine, governance, structural reform, Denmark, regional authorities, counties, municipalities and national strategies. The equivalent terms in Danish were also used during the search process (e.g. "Sundheds-IT" for "eHealth", "elektronisk patient journal" for "electronic health records"). The author also systematically searched through the reference lists of included studies. Secondary data collection relied on searching through Danish government websites (e.g. National eHealth Authority, Danish Health and Medicines Authority, Danish Ministry of Health) for reports and Danish news media articles.

Inclusion and exclusion criteria

The inclusion criteria for the primary data sources were peer-reviewed studies that discussed Denmark's eHealth services, structural reforms and national strategies for the implementation of eHealth interventions. Only English full-text papers published in peer-reviewed journals and

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