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A SYSTEMATIC LITERATURE REVIEW ON E-HEALTH IMPLEMENTATION AND POLICIES*

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Abstract. Despite the existing attention to e-Health implementation, there are several gaps and bottlenecks related to its implementation and policies. Starting from previous research, this paper presents a systematic literature review that we conducted to determine the current state of the art in e-Health implementation and policies, with particular attention to the European area. After the research and filtering of the papers, 49 papers were selected to be carefully examined and compared according to a set of criteria including objective, targeted and implementation compliance. Based on the obtained results, we identified several gaps and suggested recommendations to fill them. Based on the results, the topic has yet to be discussed and deepened, bringing to synthesis the different experiences gained in the field by both operators and researchers.

Keywords: SRL; e-Health; digital platforms; implementation; policies

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1. Introduction

Implementation of electronic health (e-Health) at a national level creates a fundamental innovation in health care. Alongside technical challenges, E-Health implementations outside numerous technological, social and organizational issues are often ignored. Accepting those e-Health achievement necessities to involve all stakeholders, achieve organizational changes and lighten resistance, e-Health implementation ambitions at observing social and organizational factors influencing large-scale health systems and at recognizing best practices. The e-Health implementation would fundamental welfares such as an important cost saving - due to information that identical exams would be eluded - an upgrading of the strength of care assistance by the opportunity of sharing user health history records between providers and health institutions (Weng et al., 2017;

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Saidi et al., 2020; Hwang et al., 2019). Within this research stream (Squitieri, et al, 2017; Zhao, et al, 2019; Bloom, et al, 2019; Lehoux, et al. 2019; Benjamin, et al. 2019) there is a strong relationship between e-Health implementation and policies. Starting from these strong relationships the aim of the paper is to share a systematic literature review on the implementation of e-Health and its policies.

2. Literature Review

The nature of the European e-Health, applied at the National level showed dated and unsolved bottlenecks within a large number of European States. The implementation provides both, opportunities and challenges for the redesigning of economic and service structures (Benjamin, et al. 2019). It is strategic to implement e-Health because it could allow maintaining and adding to the creation of information systems, both, patients and medical, in a specific way, but also as organizational value (Squitieri, et al, 2017; Zhao, et al, 2019; Bloom, et al, 2019). Furthermore, to create value means implementing e-Health, working in alignment, coordination, and co-creation. Value in e-Health means changing the information system at all levels of organizational structure (Kelly, et al. 2019; Casado-Vara et al, 2019). Past studies (Hwang et al 2008; van Gemert-Pijnen, et al. 2011) has exposed that the innovative vision, as it is increasingly along the adoption and the application process, results in an ultimate implementation that is frequently far from the initial vision. The implementation is comparable to the introduction of the main management innovation. The key phases of the projected growth would be the macro and micro-actions. These two levels must be in continuous interaction to realize the implementation (Baltussen et al 2019; Wong et al., 2019). A recent study argues that these implementation processes are functional for generating positive value in health (Fenwick et al., 2020; Rothery, et al 2020; Iqbal, et al. 2019; Porter et al, 2019; Urena, et al. 2019; Finkelstein, et al. 2019). According to the literature (Chohan, 2019), e-Health can improve collective and individual service delivery (Romzek, et al., 2014; Bryson, et al., 2014; Mintromet al, 2017; Cluley et al 2020).

Furthermore, success and sustainability are strongly related also to deep cultural change within the health departments which, as underlined in literature (Martins, et al., 2019; Ferlie et al., 2019; Cronemberger et al, 2019), is one of the main obstacles is the health professionals' resistance. There are interesting contributions that consider e-Health implementation as enabling factor to create an information system in health (Martins, et al., 2019; Ferlie, et al.,2019; Cronemberger et al, 2019; Palanisamy et al 2019). Given today's changes in the health market, due to the pandemic Covid 19 (Capone et al, 2021), that involves the world, most health departments' is implementing e-Health, which ensures a continuous improvement of health services and their adaptation to change. Nevertheless, avoiding these errors, in starting stage, is strategic, in fact: e-Health serves as a basis for knowledge sharing, quality of service (Yang, 2016), regulatory compliance, and stakeholder collaboration (Lepore et al., 2018, Tuikka, et al., 2016; Bonomi, 2016). Furthermore, in the average and a long time, the difficulties in correcting errors increase exponentially over the life cycle (Krebs, et al, 2015; Cooper, et al., 2019; Porter 2010; Campanella et al. 2016; Adler-et al., 2015; Desautels, et al., 2016; Tavares, et al 2016;). The inappropriate use of digital tools, both, by customers and health personnel is a typical mistake to be avoided, discussed and explored in the literature (Nguyen, et al., 2014; Strong, et al., 2014;). To overcome this shortcoming and expand the use of E-Health, the Governments, have introduced an extensive investment to overcome these bottlenecks supporting new educational behavior, for both, the customers and healthcare (Aldosari, 2017; Fukami, et al, 2019; Joukes, et al., 2019). These support actions are also concentrated within the department or where e-Health is used, to improve its organizational dimension: flexibility, complexity, and variability (Martel, et al., 2018; Saleem, et al 2018; Bonomi, et al., 2015). In this paper, we rely on guidelines depicted in (Keele, 2007) to conduct a systematic literature review (SLR) that aims to determine the current state of the art in E-Health and identify the gaps that should be filled in this research area. An SLR is distinguished from other types of literature review primarily by a comprehensive literature search and specification of research questions that should be addressed (Keele, 2007). To the best of our knowledge, (Ross, et al 2016) is the existing literature review that focuses on the implementation of E-Health. The authors from 2009 to 2014, have classified 37 papers related to the topic. Our

SLR complements that of (Ross, et al, 2016) in terms of both literature and criteria. Indeed, after the search and filtering of papers, 49 have been chosen. To compare published research (Ross, et al 2016) we have established a set of criteria, such as the objective, target domain, representation format, conformance, implementation, and evaluation. Our study also aims to see how the characteristics of E-Health have evolved over the past few years by comparing our results with those of Ross et al 2016. The paper, using the SLR tool, concerning the implementation of e-Health, aims to better understand the phenomenon and inform operators in the sector what can be the possible reflections and actions to be evaluated to implement e-Health. The remainder of this paper is organized as follows: after the introduction, and conceptual background section 2 highlights the main literature contributes linked to the topic and aim of the paper, section 3 methodology, highlight the SRL criteria, section 4 display results, and finally in section 5 there are conclusive.

3. Methodology

A Systematic Literature Review (SLR) is a specific type of literature reviews that is characterized by (Keele, 2007):

- A specification of research questions that should be addressed;
- A comprehensive and unbiased search for the relevant literature;
- An explicit definition of inclusion and exclusion criteria;

One of the main reasons for undertaking an SLR is to summarize and evaluate existing work in a given research area, identify their gaps, and suggest work to address them. Based on the guidelines depicted in (Keele, 2007), we conducted our SLR in several stages:

- Formulating the research questions
- Extracting and filtering papers
- Defining evaluation and comparison criteria
- Presenting and discussing the obtained results

The remainder of this section describes the details of each stage.

3.1 *Formulating the research questions*

The specification of research questions (RQs) is the most important part of any SLR as they guide authors throughout the review process (Keele, 2007). The RQs that should be addressed in our SLR are formulated as follows:

RQ1: What are the areas and goals targeted by E Health implementations these last years?

RQ2: What are the formats used for the representation of E-Health implementations?

RQ3: Do the proposed implementations comply with the implementation mechanism specified by the WHO?

RQ4: How is E-Health implementation demonstrated and evaluated.

3.2 *Extracting and filtering papers*

To retrieve papers proposing E-Health implementation, we constructed our search string firstly by combining the main terms E-Health and Implementation. To make the search as comprehensive as possible and not forget any main terms, we replaced the term E-Health with Application and the term

Implementation was replaced by several derived words (e.g., Implementing) or belonging to the same semantic field (e.g., Delivery solution, Standard, Customers, System). The final search string is structured as follows: Search string = (“E-Health” OR “Implementation” AND “Applic*” OR “Delsol*” OR “Standa*” OR “Custom*” OR “System”).

We resorted to several databases and search engines like Web of Science, Scopus, Science Direct, Google Scholar, and IEEE Xplore Digital Library. Besides, each found article was used for a backward search through its related work section. Our SLR targets all E-Health implementation published over the time of 2016 to 2021 in

journals, conference/workshop proceedings, and book chapters. For this, we filtered the obtained papers according to the following exclusion criteria:

- Papers published before November 6 2016 whether or not they are treated in Ross et al 2016;
- Papers that are not published in journals, conference/workshop proceedings, and book chapters such as master and doctoral theses;
- Papers that do not propose a new e-Health implementation;
- Papers are written in a language other than English;
- Papers that describe the same E-Health implementation in the same way.

Filtering has greatly reduced the number of papers. In fact, after the paper collection, we obtained a total of 93 papers. Next, we discarded papers that were published before November 6, 2016, duplicate/similar papers and those in which we did not find an E-Health implementation. However, we have kept the papers that propose an E-Health implementation whether it is a primary or secondary contribution. Accordingly, a set of 49 papers was retained for an in-depth examination in our SLR. Figure 1 displays the main steps of the paper extraction and filtering process.

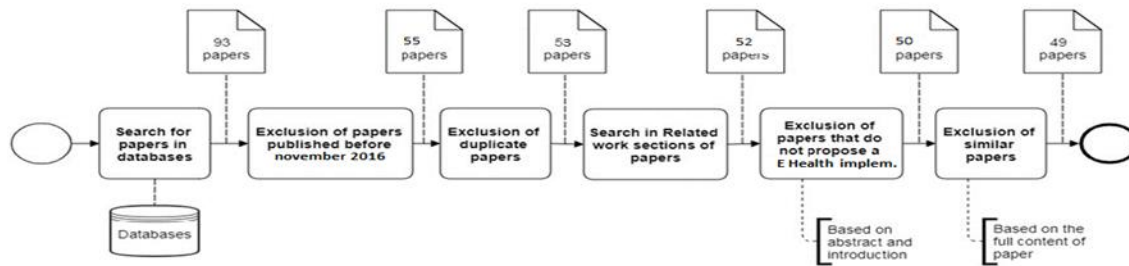


Figure 1. Process of paper extraction and filtering

Source: our elaboration

3.3 Defining evaluation and comparison criteria

To evaluate and compare the E-Health implementation, we have defined the following criteria:

- Publication type: indicates if the extension has been published in a journal, a conference/workshop proceeding, or a book chapter.
- Aim: indicates the reason for which the implementation was proposed or the problem that it solves.
- Category: we have defined two categories to classify the E-Health Implementation according to their purpose. The first category is intended to represent or handle the processes of a particular domain of healthcare: e.g., cardiology, orthopedics, and vascular diseases. The second category aims to improve healthcare performance: e.g., cost, security, compliance, and quality. The extensions of the second category are independent of a specific domain but, they can be used in any domain.
- E-Health implementation related to software: specifies the version of the software.
- Implementation name: indicates whether a name has been assigned to the proposed solution.
- Main domain: Designates the main domain targeted by an implementation knowing that some extensions deal with multiple domains (e.g., quality in healthcare processes) but only the main domain is considered.
- Demonstration: indicates whether an implementation has been demonstrated through an operational example before to be inserted within e.g., the department, or the hospital.

- Implementation Modality: mentions whether technologies have been implemented either by integrating them into an existing tool or by developing a new tool.
- Evaluation: specifies for each tool (existing and modify or new) whether it has been evaluated and which method is used for the evaluation.

Conformity: determines whether an E-health implementation complies with the ISO both standards and recommendations also, in terms of whether it is reused, customized, or extended

4. Results

In table 1, we define for each e-Health implementation the publication type ('J' for the journal, 'C' for conference or workshop and 'Ch' for chapter), the main purpose of the implementation as well as the category ('Imp' for improvement and 'SD' for specific- domain).

Table 1. Comparison of e-Health implementation according to their publication type, aim, and category

e-Health Implementation	Publication Type	Aim	Category
An et al., 2021	J	The Authors, identify, main e health inter-organizational research opportunities modeled through an evaluation approach	Imp
Ahmed et al., 2019	J	The Authors, identify, main e health inter-organizational research opportunities modeled through an evaluation approach	Imp
Aldosari 2017	J	The Author, identify, the main opportunities for the application of automation in health care contexts	SD
Alonso et al., 2021	J	The Author, identify, the main opportunities for the application of automation in health care contexts	SD
Bakker et al., 2016	J	The Authors, identify, the main phases of implementation of the technologies in e health contexts	SD
Bartholomew Eldridge et al., 2016	Ch	The Authors develop a planning health promotion program with information technologies	Imp
Benjamin et al., 2019	J	The Authors study the information and communication technologies applied in health care contexts	SD
Biancone et al., 2021	J	The Authors study the information and communication technologies applied in health care contexts	SD
Bitar et al., 2021	J	The Authors, identify, the main phases of implementation of the technologies in e health contexts	SD
Bokolo 2021	J	The Authors study the information and communication technologies applied in health care contexts	SD
Bloom et al., 2019	C	The Author study applied information and communication technologies and economic dynamics in health contexts	SD
Casado Vara et al., 2019	J	The Authors develop information technologies applications applied to the healthcare environment	SD
Chang et al., 2021		Authors highlight difficulties in implementing e-health	Imp
Chatterjee et al., 2019	C	Authors highlight difficulties in implementing e-health	Imp
Chohan 2019	Ch	The Author highlights the difficulties in implementing e-health in relation to value creation	Imp
Cooper et al., 2019	J	The Authors highlight the economic dynamics of the implementation of e health	Imp
Covvey et al., 2017	C	The Authors highlight the evolution of skills and related gaps in the implementation of e health	Imp
Desautels et al., 2016	J	The Authors highlight the evolution of skills and related gaps in the implementation of e health in healthcare contexts	SD
Enam et al., 2018	J	The Author highlights the interventions necessary in the implementation of e health in health care contexts	SD
Ferlie et al., 2019	C	The Authors highlight the interventions necessary in the implementation of e health for the creation of value	Imp
Ferwerda et al., 2016	J	The Authors measured the benefits of therapy using information technology	Imp

Finkelstein et al., 2019	J	The Authors measure the benefits of health care programs and related technologies	Imp
Fukami et al., 2019	J	The Authors measure the benefits of information technology in healthcare contexts	SD
Granja et al., 2018	J	The Authors identify factors determining the success and failure of e Health interventions	Imp
Gemert-Pijnen 2017	J	The Author identifies key components determining the success and failure of e Health interventions	Imp
Greenhalgh et al., 2017	J	The Authors identify key components beyond adoption of e Health	Imp
Hekler et al., 2016	J	The Authors identify models and theories related to e Health implementation	Imp
Iqbal et al., 2019	J	The Authors identify key factors design and implementation of e Health	Imp
Jacobs et al., 2016	J	The Authors study e Health implementation to improve health literacy	Imp
Joukes et al., 2019	J	The Authors study e Health implementation to improve health professionalities	Imp
Kaur et al., 2021	J	The Authors study e Health implementation to improve health professionalities	Imp
Kelly et al., 2019	C	The Authors study e Health evaluation	Imp
Lehoux et al., 2019	J	The Authors study the relationship between innovation and e-Health evaluation	Imp
Lepore et al., 2018	J	The Authors study cultural orientations and information systems success in public and private hospitals:	SD
Li et al., 2021	J	The Authors study the development of e Health applications	Imp
Maramba et al., 2019	J	The Authors study the development of e Health applications	Imp
Martel et al., 2018	J	The Authors study software applications related to e Health	Imp
Michie et al., 2017	J	The Authors identify the interventions to promote e Health	Imp
Moller et al., 2017	J	The Authors study the impact of e Health in health care contexts	SD
Morrissey et al., 2016	J	The Authors study behavior change in e Health implementation	Imp
Ossebaard et al 2016	J	The Authors study e Health and quality in health care	SD
Palanisamy et al., 2019	J	The Authors study innovation technologies and health care context	SD
Patrick et al., 2016	J	The Authors study technologic change and implications for e health	Imp
Perrin et al., 2019	J	The Authors identify key factors from e Health implementation	Imp
Pieterse et al., 2018	Ch	The Authors study the complexity of e Health Implementation	Imp
Saleem et al., 2018	C	The Authors study the complexity of e Health Implementation in health care context	SD
Schreiweis et al., 2019	J	The Authors study barriers and facilitators to the implementation of e Health services	SD
Schueller et al., 2017	J	The Authors study behavioral intervention technologies	Imp
Sieverink et al., 2017	J	The Authors study e Health implementation identifying key factors to improve outcome and resources	SD
Squitieri et al., 2017	J	The Authors study e Health implementation identifying key factors to improve services and resources	SD
van der Kleij et al., 2019	J	The Authors study e Health in health care contexts	SD
van der Vaart et al., 2017	J	The Authors measure e health implementation in health care contexts	SD
Walsh et al., 2016	J	The Authors measure e health implementation related to projects	Imp
Warth et al., 2019	J	The Authors measure e health implementation related to service outcomes	Imp
Vis et al., 2020	J	The Authors measure e health implementation related to service outcomes	Imp
WHO 2017	Ch	The Organization highlight the global diffusion of e Health	Imp
Wu et al., 2021	J	The Authors identify e Health assessment factors	Imp
Yang et al., 2021	J	The Authors identify e Health assessment factors	Imp
Yusif et al., 2017	J	The Authors identify e Health assessment factors	Imp
Zhao et al., 2019	J	The Authors study innovation technologies and its application oin health care contexts	SD

Source: own making

It is possible to note, from table 1, that the majority of publications type are in Journals. We can explain this by the fact that e-Health implementation is consistent enough in terms of operative and theory contribution to be submitted to journals. In line with this, the distribution by category is balanced between improvement and specific

domain. In table 2, e-Health implementation is compared according to their name, main domain, demonstration, implementation, and evaluation.

Table 2. Comparison of e-Health implementation to their Authors, e Health name, domain, demonstration, implementation, and evaluation

Authors	eH Name	Domain	Demonstration	Implementation	Evaluation
Ahmed et al., 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
Aldosari 2017	Yes	EMR/EHR	Yes	Hospital	Comparison with other approaches
Bakker et al., 2016	Yes	App	Yes	Hospital	Comparison with other approaches
Bartholomew Eldridge et al., 2016	NA	NA	NA	Theory and Model	Comparison with other approaches
Benjamin et al., 2019	Yes	Yes	Yes	Hospital	Comparison with other approaches
Bloom et al., 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
Casado Vara et al., 2019	Yes	Blockchain	Yes	Hospital	Comparison with other approaches
Chatterjee et al., 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
Chohan 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
Cooper et al., 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
Covvey et al., 2017	NA	NA	NA	Theory and Model	NA
Desautels et al., 2016	YES	EHR	Yes	Hospital	Comparison with other approaches
Enam et al., 2018	NA	NA	NA	Theory and Model	NA
Ferlie et al., 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
Ferwerda et al., 2016	Yes	T	Yes	Hospital	Comparison with other approaches
Finkelstein et al., 2019	NA	NA	NA	Theory and Model	NA
Fukami et al., 2019	Yes	EHR	Yes	Hospital	Comparison with other approaches
Granja et al., 2018	NA	NA	NA	Theory and Model	Comparison with other approaches
Gemert-Pijnen 2017	Yes	ST	Yes	Hospital	Comparison with other approaches
Greenhalgh et al., 2017	NA	NA	NA	Theory and Model	Comparison with other approaches
Hekler et al., 2016	NA	NA	NA	Theory and Model	Comparison with other approaches
Iqbal et al., 2019	Yes	SW	Yes	Hospital	NA
Jacobs et al., 2016	NA	NA	NA	Theory and Model	Comparison with other approaches
Joukes et al., 2019	Yes	EHR	Yes	Hospital	Comparison with other approaches
Kelly et al., 2019	Yes	CLEF	Yes	Hospital	Comparison with other approaches
Lehoux et al., 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
Lepore et al., 2018	NA	NA	NA	Theory and Model	Comparison with other approaches

Maramba et al., 2019	Yes	SW	Yes	Hospital	NA
Martel et al., 2018	Yes	SW	Yes	Hospital	Comparison with other approaches
Michie et al., 2017	NA	NA	NA	Theory and Model	Comparison with other approaches
Moller et al., 2017	NA	NA	NA	Theory and Model	Comparison with other approaches
Morrissey et al., 2016	NA	App	Yes	Hospital	Comparison with other approaches
Ossebaard et al 2016	NA	NA	NA	Theory and Model	Comparison with other approaches
Palanisamy et al., 2019	Yes	Big Data	Yes	Hospital	Comparison with other approaches
Patrick et al., 2016	NA	NA	NA	Theory and Model	NA
Perrin et al., 2019	NA	RAFT	Yes	Hospital	Comparison with other approaches
Pieterse et al., 2018	NA	NA	NA	Theory and Model	Comparison with other approaches
Saleem et al., 2018	Yes	EHR	Yes	Hospital	Comparison with other approaches
Schreiweis et al., 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
Schueller et al., 2017	NA	NA	NA	Theory and Model	Comparison with other approaches
Sieverink et al., 2017	Yes	Big Data	Yes	Hospital	Comparison with other approaches
Squitieri et al., 2017	NA	NA	NA	Theory and Model	Comparison with other approaches
van der Kleij et al., 2019	Yes	EHR	Yes	Hospital	NA
van der Vaart et al., 2017	NA	EHR	Yes	Hospital	Comparison with other approaches
Walsh et al., 2016	NA	App	Yes	Hospital	Comparison with other approaches
Warth et al., 2019	NA	NA	NA	Theory and Model	Comparison with other approaches
WHO 2017	NA	NA	NA	Theory and Model	Comparison with other approaches
Yusif et al., 2017	Yes	NA	Yes	Hospital	Comparison with other approaches
Zhao et al., 2019	Yes	MHM	Yes	Hospital	Comparison with other approaches

Source: own making

In table 2, a few documents indicate the name of e-health implemented, in terms of brand and tools. This is possible, considering the indirect advertising that can result. Furthermore, more than 50% of papers, have indicated domain. The domain is related to specific applications, e.g., EHR, but also the development of big data and communication. The papers that have indicated the domain also contain the demonstration, more than 50%. The implementation is related to the hospital, while in a few papers there is not an evaluation approach. In addition, also in terms of theory and model, interesting information emerging related to both key factors, and bottlenecks. The Demonstration, implementation and evaluation, within hospitals are, also strictly linked to, our previous study. These reasons highlight that all variables have been considered in functional properties in our previous study. In table 3, we compare the E-Health implementation taking into account the conformity criterion: ISO standard, recommendations, reused, customized or extended.

Table 3. Comparison of e-Health implementation to their conformity: ISO standard, recommendations, reused, customized, extended

Authors	Conformity	ISO	Reccomendations	Reused	Customized	Extended
Ahmed et al., 2019	NA	NA				
Aldosari 2017	Yes	Yes	X		X	X
Bakker et al., 2016	Yes	Yes	X	X	X	X
Bartholomew Eldridge et al., 2016	NA	NA				
Benjamin et al., 2019	Yes	Yes	X		X	
Bloom et al., 2019	NA	NA				
Casado Vara et al., 2019	Yes	NA			X	X
Chatterjee et al., 2019	NA	NA				
Chohan 2019	NA	NA				
Cooper et al., 2019	NA	NA				
Covvey et al., 2017	NA	NA				
Desautels et al., 2016	Yes	Yes	X	X	X	X
Enam et al., 2018	NA	NA				
Ferlie et al., 2019	NA	NA				
Ferwerda et al., 2016	Yes	Yes	X		X	X
Finkelstein et al., 2019	NA	NA				
Fukami et al., 2019	Yes	YES	X		X	X
Granja et al., 2018	NA	NA				
Gemert-Pijnen 2017	Yes	YES	X	X	X	X
Greenhalgh et al., 2017	NA	NA				
Hekler et al., 2016	NA	NA				
Iqbal et al., 2019	Yes	Yes	X	X	X	X
Jacobs et al., 2016	NA	NA				
Joukes et al., 2019	Yes	Yes	X		X	X
Kelly et al., 2019	Yes	Yes	X		X	X
Lehoux et al., 2019	NA	NA				
Lepore et al., 2018	NA	NA				
Maramba et al., 2019	Yes	Yes	X		X	X
Martel et al., 2018	Yes	Yes	X	X	X	X
Michie et al., 2017	NA	NA				
Moller et al., 2017	NA	NA				
Morrissey et al., 2016	NA	Yes	X		X	X
Ossebaard et al 2016	NA	NA				
Palanisamy et al., 2019	Yes	Yes	X	X	X	X
Patrick et al., 2016	NA	NA				
Perrin et al., 2019	NA	Yes	X		X	X
Pieterse et al., 2018	NA	NA				
Saleem et al., 2018	Yes	Yes	X		X	X
Schreiweis et al., 2019	NA	NA				
Schueller et al., 2017	NA	NA				
Sieverink et al., 2017	Yes	Yes	X	X	X	X
Squitieri et al., 2017	NA	NA				
van der Kleij et al., 2019	Yes	Yes	X	X	X	X
van der Vaart et al., 2017	NA	Yes	X		X	X
Walsh et al., 2016	NA	Yes	X		X	X
Warth et al., 2019	NA	NA				
WHO 2017	NA	NA				
Yusif et al., 2017	Yes	NA	X		X	X
Zhao et al., 2019	Yes	Yes	X	X	X	X

Source: own making

In Table 3, most authors represent their E-Health implementation in the form of both, theory and model. However, 23/40, papers, make a comparison of E-Health implementation to their conformity and related it with ISO standards, recommendations, reused, customized, and extend. This comparison is little used despite its specific and standard recommendation. In Tables 2 and 3, big data are widely used. Furthermore, these two implementations, take into account, on the one hand, the relationship with the external environment by defining everything that can occur during the implementation and execution, and, on the other, the impact on the process flow in terms of information about what activities require to be performed and what they generate. In Table 3, recommendations and customization are present in all 23 documents. We believe that this result is logical, as this category includes the main elements to define the behavior of the electronic health implementation process. Furthermore, in Table 3, recommendation and customization are present, in each paper, together. As a result, recommendation and customization are strongly related to the implementation of e-Health. The statistics reveal that: less than half of the papers comply with e-Health implementation which hampers the comparability. This reflection emerges from the statistics of Table 3, in which the phase of recommendations is always linked to personalization, therefore, if on the one hand, ISO standards are followed, on the other hand, they are customized to the specific needs of those who adopt those technologies. The latter result, to be understood in depth, needs to study and research the different cases of implementation, for example in hospitals. The not simple understanding of this implementation highlights literature more inclined toward theoretical study and models. All implementations use the recommended tools, although, case studies in different contexts are little explored and as a result, absentee comparisons. Therefore, we can expect publications that study the differences between specific cases. The objective of our literature review is to complement that of (Ross et al., 2016) in terms of both literature and criteria. In particular: a) the publications related to the implementation of e-Health have increased slightly. This finding is in line with the study by Ross et al., (2016). Although, these results are useful, is possible argue that:

- the influence of the recent and still ongoing pandemic, Covid 19, which requires social distancing of distance care, has brought attention also not only to medical research to the topic of e-Health;
- this shows that the topic of research has gained maturity and implementations are more consistent, at the current stage with the new dynamics of treatment, the pandemic phase, and we believe that it will increase further in the coming years;
- the topic examined in Ross et al., (2016) is slight, more oriented towards theoretical and model implementations, in our study, which follows the Author's study, the focus on implementation sees growth for studies that verify compliance, standards, recommendations and customized solutions.

Our SRL shows greater attention to the customization of the solutions within the implementation carried out.

5. Discussion

In this paper, SLR was conducted to determine the current state of the art in e-Health implementation and identify our research gaps. The extraction and filtering of papers resulted in a set of 49 e-Health implementations. The e-Health implementation is evaluated and compared according to a set of criteria (Marino et al, 2022, 2021, 2021a, 2021b). The SLR can contribute to helping both, research and operative researchers choose the e-Health implementation. After this SRL, is possible to deduce the following points:

- The targeted areas and objectives are not very diversified;
- Despite a slight improvement in recent years, less than half of the extensions conform to the theory and model approaches;
- The specific domain of e-Health implementation is yet little developed;
- e-Health implementations are rarely evaluated in terms of comparison of case studies, despite the existence of several theoretical studies.

Based on these points, we suggest the following path that may bridge the identified gaps and advance the field of E-Health implementation:

- Authors should develop e-Health implementation to provide considerations to enable a better understanding of the phenomenon;
- In addition, a clear methodology should be provided throughout the development of comparison between case studies with attention to the target domain related to implementation;
- It is desirable to define global standards and not only standards valid in each Country;

Finally, the studies should make more effort in the operational implementation of e-Health, by integrating it into a theory and model to prove its feasibility. Based on these indications, the topic has yet to be discussed and deepened, bringing to synthesis the different experiences gained in the field by both operators and researchers.

Conclusions

This last step is devoted to the presentation, interpretation, and analysis of the results obtained after a deeper examination of each paper. For this, we begin by classifying, comparing, and assessing all e-Health implementations in tables according to the criteria defined in the previous stage. Finally, we interpret the obtained results and provide explanations. What emerges from our research is the presence of several gaps and bottlenecks associated to e-Health implementation and policies. Accepting those e-Health achievement necessities to involve all stakeholders, achieve organizational changes and lighten resistance, e-Health implementation ambitions at observing social and organizational factors influencing large-scale health systems and at recognizing best practices. A multi-level transition process that sees a non-unanimous action within the individual systems of government and that represents a further future analysis of what are the current and future paths on which to evolve this digital transition.

References

- Adler-Milstein, J., DesRoches, C. M., Kralovec, P., Foster, G., Worzala, C., Charles, D., & Jha, A. K. (2015). Electronic health record adoption in US hospitals: progress continues, but challenges persist. *Health Affairs*, 34(12), 2174-2180. <https://doi.org/10.1377/hlthaff.2015.0992>
- Ahmed, B., Dannhauser, T., & Philip, N. (2019). A systematic review of reviews to identify key research opportunities within the field of eHealth implementation. *Journal of Telemedicine and Telecare*, 25(5), 276-285. <https://doi.org/10.1177/1357633X18768601>
- Aldosari, B. (2017). Patients' safety in the era of EMR/EHR automation. *Informatics in Medicine Unlocked*, 9, 230-233. <https://doi.org/10.1016/j.imu.2017.10.001>
- Alonso, S. G., Marques, G., Barrachina, I., Garcia-Zapirain, B., Arambarri, J., Salvador, J. C., & de la Torre Díez, I. (2021). Telemedicine and e-Health research solutions in literature for combatting COVID-19: a systematic review. *Health and Technology*, 11(2), 257-266. <https://doi.org/10.1007/s12553-021-00529-7>
- An, L., Bacon, E., Hawley, S., Yang, P., Russell, D., Huffman, S., & Resnicow, K. (2021). Relationship between coronavirus-related eHealth literacy and COVID-19 knowledge, attitudes, and practices among US adults: web-based survey study. *Journal of Medical Internet Research*, 23(3). <https://doi.org/10.2196/25042>
- Baltussen, R., Marsh, K., Thokala, P., Diaby, V., Castro, H., Cleemput, I., & Broekhuizen, H. (2019). Multicriteria decision analysis to support health technology assessment agencies: benefits, limitations, and the way forward. *Value in Health*, 22(11), 1283-1288. <https://doi.org/10.1016/j.jval.2019.06.014>
- Bakker, D., Kazantzis, N., Rickwood, D. & Rickard, N. (2016). Mental health smartphone apps: Review and evidence-based recommendations for future developments. *JMIR Mental Health*, 3(1), e7. <https://doi.org/10.2196/mental.4984>
- Bartholomew Eldridge, L. K., Markham, C. M., Ruiter, R. A. C., Fernández, M. E., Kok, G., & Parcel, G. S. (2016). Planning health promotion programs; An Intervention Mapping approach (4th edition). San Francisco, CA: Jossey-Bass.

- Benjamin, E. J., Muntner, P., & Bittencourt, M. S. (2019). Heart disease and stroke statistics-2019 update: a report from the American Heart Association. *Circulation*, 139(10), e56-e528. <https://doi.org/10.1161/CIR.0000000000000659>
- Biancone, P., Secinaro, S., Marseglia, R., & Calandra, D. (2021). E-health for the future. Managerial perspectives using a multiple case study approach. *Technovation*. <https://doi.org/10.1016/j.technovation.2021.102406>
- Bitar, H., & Alismail, S. (2021). The role of eHealth, telehealth, and telemedicine for chronic disease patients during COVID-19 pandemic: A rapid systematic review. *Digital Health*, 7. <https://doi.org/10.1177/20552076211009396>
- Bloom, D. E., Canning, D., Kotschy, R., Prettnner, K., & Schünemann, J. J. (2019). Health and economic growth: reconciling the micro and macro evidence (No. w26003). National Bureau of Economic Research. <https://doi.org/10.3386/w26003>
- Bonomi, S. (2016). The electronic health record: a comparison of some European countries. In *Information and Communication Technologies in Organizations and Society* (pp. 33-50). Springer, Cham. https://doi.org/10.1007/978-3-319-28907-6_3
- Bonomi, S., Zardini, A., Rossignoli, C., & Dameri, P. R. (2015). E-health and value co-creation: the case of electronic medical record in an Italian academic integrated hospital. In *International Conference on Exploring Services Science* (pp. 166-175). Springer, Cham. https://doi.org/10.1007/978-3-319-14980-6_13
- Bokolo, A. J. (2021). Application of telemedicine and eHealth technology for clinical services in response to COVID-19 pandemic. *Health and Technology*, 11(2), 359-366. <https://doi.org/10.1007/s12553-020-00516-4>
- Bryson, J. M., Crosby, B. C., & Bloomberg, L. (2014). Public value governance: Moving beyond traditional public administration and the new public management. *Public Administration Review*, 74(4), 445-456. <https://doi.org/10.1111/puar.12238>
- Campanella, P., Lovato, E., Marone, C., Fallacara, L., Mancuso, A., Ricciardi, W., & Specchia, M. L. (2016). The impact of electronic health records on healthcare quality: a systematic review and meta-analysis. *The European Journal of Public Health*, 26(1), 60-64. <https://doi.org/10.1093/eurpub/ckv122>
- Capone, V., Marino, L., & Park, M. S. A. (2021). Perceived employability, academic commitment, and competency of university students during the COVID-19 Pandemic: An exploratory study of student well-being. *Frontiers in Psychology*, 12, 788387. <https://doi.org/10.3389/fpsyg.2021.788387>
- Casado-Vara, R., & Corchado, J. (2019). Distributed e-health wide-world accounting ledger via blockchain. *Journal of Intelligent & Fuzzy Systems*, 36(3), 2381-2386. <https://doi.org/10.3233/JIFS-169949>
- Chang, Y. S., Zhang, Y., & Gwizdka, J. (2021). The effects of information source and eHealth literacy on consumer health information credibility evaluation behavior. *Computers in Human Behavior*, 115. <https://doi.org/10.1016/j.chb.2020.106629>
- Chatterjee, A., Gerdes, M. W., & Martinez, S. (2019). eHealth Initiatives for The Promotion of Healthy Lifestyle and Allied Implementation Difficulties. In *2019 International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)* (pp. 1-8). IEEE. <https://doi.org/10.1109/WiMOB.2019.8923324>
- Chohan, U. W. (2019). *Public Value Theory and Budgeting: International Perspectives*. Routledge.
- Cluley, V., & Radnor, Z. (2020). Rethinking co-creation: the fluid and relational process of value co-creation in public service organizations. *Public Money & Management*, 1-10. <https://doi.org/10.1080/09540962.2020.1719672>
- Cooper, Z., Craig, S. V., Gaynor, M., & Van Reenen, J. (2019). The price ain't right? Hospital prices and health spending on the privately insured. *The Quarterly Journal of Economics*, 134(1), 51-107. <https://doi.org/10.1093/qje/qjy020>
- Covvey, H. D., & Rosenal, T. (2017). The expanding universe of health informatics: The evolving competency gap. Workshop Abstract. Retrieved from www.uvic.ca/hsd/itch/program/workshops/index.php
- Cronemberger, F., & Gil-Garcia, J. R. (2019). Big Data and analytics as strategies to generate public value in smart cities: Proposing an integrative framework. In *Setting foundations for the creation of public value in Smart Cities* (pp. 247-267). Springer, Cham. https://doi.org/10.1007/978-3-319-98953-2_10

- Desautels, T., Calvert, J., Hoffman, J., Jay, M., Kerem, Y., Shieh, L., & Wales, D. J. (2016). Prediction of sepsis in the intensive care unit with minimal electronic health record data: a machine learning approach. *JMIR Medical Informatics*, 4(3), e28. <https://doi.org/10.2196/medinform.5909>
- Enam, A., Torres-Bonilla, J., & Eriksson, H. (2018). Evidence-based evaluation of eHealth interventions: systematic literature review. *Journal of Medical Internet Research*, 20(11), e10971 <https://doi.org/10.2196/10971>
- Fenwick, E., Steuten, L., Knies, S., Ghabri, S., Basu, A., Murray, J. F., & Rothery, C. (2020). Value of information analysis for research decisions—an introduction: report 1 of the ISPOR Value of Information Analysis Emerging Good Practices Task Force. *Value in Health*, 23(2), 139-150. <https://doi.org/10.1016/j.jval.2020.01.001>
- Ferlie, E., Pegan, A., Pluchinotta, I., & Shaw, K. (2019). Co-Production and Co-Governance: Strategic Management, Public Value and Co-Creation in the Renewal of Public Agencies across Europe.
- Ferwerda, M., van Beugen, S., van Riel, P. C. L. M., van de Kerkhof, P. C. M., De Jong, E. M. G. J., & Smit, J. V., Evers, A. W. M. (2016). Measuring the therapeutic relationship in Internet based interventions. *Psychotherapy & Psychosomatics*, 85, 4749. <https://doi.org/10.1159/000435958>
- Finkelstein, A., Hendren, N., & Luttmer, E. F. (2019). The value of medicaid: Interpreting results from the Oregon health insurance experiment. *Journal of Political Economy*, 127(6), 2836-2874. <https://doi.org/10.1086/702238>
- Fukami, Y., & Masuda, Y. (2019). Success Factors for Realizing Regional Comprehensive Care by EHR with Administrative Data. In *Innovation in Medicine and Healthcare Systems, and Multimedia* (pp. 35-45). Springer, Singapore. https://doi.org/10.1007/978-981-13-8566-7_4
- Gemert-Pijnen, J. E. W. C. (2017). Key components in eHealth interventions combining self tracking and persuasive eCoaching to promote a healthier lifestyle: A scoping review. *Journal of Medical Internet Research*, 19(8), e277. <https://doi.org/10.2196/jmir.7288>
- Granja, C., Janssen, W., & Johansen, M. A. (2018). Factors determining the success and failure of eHealth interventions: systematic review of the literature. *Journal of Medical Internet Research*, 20(5), e10235. <https://doi.org/10.2196/10235>
- Hwang, W. S., & Choi, Y. H. (2019). Socio-economic impact of the mHealth adoption in managing diabetes. *Technology Analysis & Strategic Management*, 31(7), 791-802. <https://doi.org/10.1080/09537325.2018.1554206>
- Hekler, E. B., Michie, S. F., Rivera, D. E., & Collins, L.M. et al. (2016). Advancing models and theories for digital behavior change interventions. *American Journal of Preventive Medicine*, 51. <https://doi.org/10.1016/j.amepre.2016.06.013>
- Hwang, J., & Christensen, C. M. (2008). Disruptive innovation in health care delivery: a framework for business-model innovation. *Health Affairs*, 27(5), 1329-1335. <https://doi.org/10.1377/hlthaff.27.5.1329>
- Iqbal, S., Kiah, M. L. M., Zaidan, A. A., Zaidan, B. B., Albahri, O. S., Albahri, A. S., & Alsalem, M. A. (2019). Real-time-based E-health systems: Design and implementation of a lightweight key management protocol for securing sensitive information of patients. *Health and Technology*, 9(2), 93-111. <https://doi.org/10.1007/s12553-018-0252-4>
- Jacobs, R. J., Lou, J. Q., Ownby, R. L., & Caballero, J. (2016). A systematic review of eHealth interventions to improve health literacy. *Health Informatics Journal*, 22(2), 81-98. <https://doi.org/10.1177/1460458214534092>
- Joukes, E., de Keizer, N. F., de Bruijne, M. C., Abu-Hanna, A., & Cornet, R. (2019). Impact of Electronic versus Paper-Based Recording before HER Implementation on Health Care Professionals' Perceptions of EHR Use, Data Quality, and Data Reuse. *Applied Clinical Informatics*, 10(02), 199-209. <https://doi.org/10.1055/s-0039-1681054>
- Kaur, M., Singh, D., Kumar, V., Gupta, B. B., & Abd El-Latif, A. A. (2021). Secure and energy efficient-based E-health care framework for green internet of things. *IEEE Transactions on Green Communications and Networking*, 5(3), 1223-1231. <https://doi.org/10.1109/TGCN.2021.3081616>
- Keele, S. (2007). Guidelines for performing systematic literature reviews in software engineering (Vol. 5). Technical Report, Ver. 2.3 EBSE Technical Report. EBSE.
- Kelly, L., Suominen, H., Goeuriot, L., Neves, M., Kanoulas, E., Li, D., & Palotti, J. (2019). Overview of the CLEF eHealth evaluation lab 2019. In *International Conference of the Cross-Language Evaluation Forum for European Languages* (pp. 322-339). Springer, Cham. –

- Krebs, P., & Duncan, D. T. (2015). Health app use among US mobile phone owners: a national survey. *JMIR mHealth and uHealth*, 3(4), https://doi.org/10.1007/978-3-030-28577-7_26
- Lehoux, P., Roncarolo, F., Silva, H. P., Boivin, A., Denis, J. L., & Hébert, R. (2019). What health system challenges should responsible innovation in health address? Insights from an international scoping review. *International Journal of Health Policy and Management*, 8(2), 63. <https://doi.org/10.15171/ijhpm.2018.110>
- Lepore, L., Metallo, C., Schiavone, F., & Landriani, L. (2018). Cultural orientations and information systems success in public and private hospitals: preliminary evidences from Italy. *BMC Health Services Research*, 18(1), 554. <https://doi.org/10.1186/s12913-018-3349-6>
- Li, S., Cui, G., Kaminga, A. C., Cheng, S., & Xu, H. (2021). Associations between health literacy, ehealth literacy, and covid-19–related health behaviors among Chinese college students: Cross-sectional online study. *Journal of Medical Internet Research*, 23(5). <https://doi.org/10.2196/25600>
- Maramba, I., Chatterjee, A., & Newman, C. (2019). Methods of usability testing in the development of eHealth applications: a scoping review. *International journal of Medical Informatics*, 126, 95-104. <https://doi.org/10.1016/j.ijmedinf.2019.03.018>
- Marino, A., Pariso, P., & Picariello, M. (2022). Digital platforms in health care: evaluating workers' expectations and profiles during pandemic time. *Entrepreneurship and Sustainability Issues*, 10(1), 226-241. [https://doi.org/10.9770/jesi.2022.10.1\(12\)](https://doi.org/10.9770/jesi.2022.10.1(12))
- Marino, A. & Pariso, P. (2021). Digital economy: technological, organizational and cultural contexts for the development of cooperation in Europe. *Entrepreneurship and Sustainability Issues*, 9(2), 363-383. [https://doi.org/10.9770/jesi.2021.9.2\(24\)](https://doi.org/10.9770/jesi.2021.9.2(24))
- Marino A. & Pariso P. (2021a). The global macroeconomic impacts of covid-19: four European scenarios. *Academy of Strategic Management Journal*, 20(2), 1-21 <https://doi.org/10.1544-1458>
- Marino, A. & Pariso, P. (2021b). E-tourism: How ICTs Help the Local Tourist District Drive Economic Vitality. The Case of Campania, Italy. *International Journal of Innovation and Technology Management (IJITM)*, 18(03), 1-25. <https://doi.org/10.1142/S0219877021500097>
- Martel, M. L., Imdieke, B. H., Holm, K. M., Poplau, S., Heegaard, W. G., Pryor, J. L., & Linzer, M. (2018). Developing a medical scribe program at an academic hospital: the Hennepin County Medical Center experience. *The Joint Commission Journal on Quality and Patient Safety*, 44(5), 238-249. <https://doi.org/10.1016/j.jcjq.2018.01.001>
- Martins, T. C. M., Zambalde, A. L., Grützmann, A., de Souza Bermejo, P. H., de Almeida, E. L., do Nascimento, T. B. P. (2019). Value Innovation in the Public Sector: Concept, Determining Factors and Framework. In International Conference on Electronic Government and the Information Systems Perspective (pp. 163-175). Springer, Cham. https://doi.org/10.1007/978-3-030-27523-5_12
- Michie, S., Yardley, L., West, R., Patrick, K., & Greaves, F. (2017). Developing and evaluating digital interventions to promote behavior change in health and health care: Recommendations resulting from an international workshop. *Journal of Medical Internet Research*, 19(6), e232. <https://doi.org/10.2196/jmir.7126>
- Mintrom, M., & Luetjens, J. (2017). Creating public value: Tightening connections between policy design and public management. *Policy Studies Journal*, 45(1), 170-190. <https://doi.org/10.1111/psj.12116>
- Moller, A. C., Merchant, G., & Conroy, D. E. (2017). Journal of Behavioural Medicine, 40, 85. Morrison, L. G. (2015). Theory-based strategies for enhancing the impact and usage of digital health behaviour change interventions: A review. *Digital Health*, 110. <https://doi.org/10.1177/2055207615595335>
- Morrissey, E. C., Corbett, T. K., Walsh, J. C., & Molloy, G. J. (2016). Behavior change techniques in apps for medication adherence: A content analysis. *American Journal of Preventive Medicine*, 50(5). <https://doi.org/10.1016/j.amepre.2015.09.034>
- Nguyen, L., Bellucci, E., & Nguyen, L. T. (2014). Electronic health records implementation: an evaluation of information system impact and contingency factors. *International Journal of Medical Informatics*, 83(11), 779-796. <https://doi.org/10.1016/j.ijmedinf.2014.06.011>
- Ossebaard, H. C., & Van Gemert-Pijnen, L. (2016). eHealth and quality in health care: implementation time. *International Journal for Quality in Health Care*, 28(3), 415-419. <https://doi.org/10.1093/intqhc/mzw032>
- Palanisamy, V., & Thirunavukarasu, R. (2019). Implications of big data analytics in developing healthcare frameworks—A review. *Journal of King Saud University-Computer and Information Sciences*, 31(4), 415-425. <https://doi.org/10.1016/j.jksuci.2017.12.007>

- Patrick, K. , Hekler, E. B. , Estrin, D. , Mohr, D. C. , Riper, H. , Crane, D., Riley, W. T. (2016). The pace of technologic change: Implications for digital health behavior intervention research. *American Journal of Preventive Medicine*, 51(5), 816824. <https://doi.org/10.1016/j.amepre.2016.05.001>
- Perrin, C., Bediang, G., Randriambelonoro, M., & Geissbuhler, A. (2019). Learning from eHealth implementations through "Implementomics": a multidimensional annotation model applied to eHealth projects of the RAFT network. *Frontiers in Public Health*, 7, 188. <https://doi.org/10.3389/fpubh.2019.00188>
- Pieterse, M., Kip, H., & Cruz-Martinez, R. R. (2018). The complexity of eHealth Implementation: A theoretical and practical perspective. In L. van Gemert-Pijnen, S. M. Kelders, H. Kip, & R.
- Saidi, T., Thune, T. M., & Bugge, M. (2020). Making 'hidden innovation' visible? A case study of an innovation management system in health care. *Technology Analysis & Strategic Management*, 1-13. <https://doi.org/10.1080/09537325.2020.1841156>
- Porter, M. E. (2010). What is value in health care. *N Engl J Med*, 363(26), 2477-2481. <https://doi.org/10.1056/NEJMp1011024>
- Porter, M. E., & Kramer, M. R. (2019). Creating shared value. In *Managing sustainable business* (pp. 323-346). Springer, Dordrecht. https://doi.org/10.1007/978-94-024-1144-7_16
- Romzek, B., LeRoux, K., Johnston, J., Kempf, R. J., & Piatak, J. S. (2014). Informal accountability in multi sector service delivery collaborations. *Journal of Public Administration Research and Theory*, 24(4), 813-842. <https://doi.org/10.1093/jopart/mut027>
- Ross, J., Stevenson, F., Lau, R., & Murray, E. (2016). Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). *Implementation Science*, 11(1), 146. <https://doi.org/10.1186/s13012-016-0510-7>
- Rothery, C., Strong, M., Koffijberg, H. E., Basu, A., Ghabri, S., Knies, S., & Fenwick, E. (2020). Value of information analytical methods: report 2 of the ISPOR Value of information analysis emerging good practices task force. *Value in Health*, 23(3), 277-286. <https://doi.org/10.1016/j.jval.2020.01.004>
- Saleem, J. J., & Herout, J. (2018). Transitioning from one Electronic Health Record (EHR) to another: a narrative literature review. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* 62(1), 489-493. Sage CA: Los Angeles, CA: SAGE Publications. <https://doi.org/10.1177/1541931218621112>
- Schreiweis, B., Pobiruchin, M., Strotbaum, V., Suleder, J., Wiesner, M., & Bergh, B. (2019). Barriers and facilitators to the implementation of eHealth services: Systematic literature analysis. *Journal of Medical Internet Research*, 21(11), e14197. <https://doi.org/10.2196/14197>
- Schueller, S. M., Tomasino, K. N. , & Mohr, D. C. (2017). Integrating human support into behavioral intervention technologies: The efficiency model of support. *Clinical Psychology: Science and Practice*, 24(1), 2745. <https://doi.org/10.1111/cpsp.12173>
- Sieverink, F., Kelders, S. M., Poel, M., & Van Gemert-Pijnen, J. E. (2017). Opening the black box of eHealth: Collecting, analyzing, and interpreting log data. *JMIR Research Protocols*. <https://doi.org/10.2196/resprot.6452>
- Squitieri, L., Bozic, K. J., & Pusic, A. L. (2017). The role of patient-reported outcome measures in value-based payment reform. *Value in Health*, 20(6), 834-836. <https://doi.org/10.1016/j.jval.2017.02.003>
- Tavares, J., & Oliveira, T. (2016). Electronic health record patient portal adoption by health care consumers: an acceptance model and survey. *Journal of Medical Internet Research*, 18(3), e49. <https://doi.org/10.2196/jmir.5069>
- Tuikka, A. M., Rantanen, M. M., Heimo, O. I., Koskinen, J., Sachdeva, N., & Kimppa, K. K. (2016). Where is patient in EHR project?. *ACM SIGCAS Computers and Society*, 45(3), 73-78. <https://doi.org/10.1145/2874239.2874250>
- Urena, R., Kou, G., Dong, Y., Chiclana, F., & Herrera-Viedma, E. (2019). A review on trust propagation and opinion dynamics in social networks and group decision making frameworks. *Information Sciences*, 478, 461-475. <https://doi.org/10.1016/j.ins.2018.11.037>
- van der Kleij, R. M., Kasteleyn, M. J., Meijer, E., Bonten, T. N., Houwink, E. J., Teichert, M., Pinnock, H. (2019). SERIES: eHealth in primary care. Part 1: Concepts, conditions and challenges. *European Journal of General Practice*, 25(4), 179-189. <https://doi.org/10.1080/13814788.2019.1658190>

van der Vaart, R. , & Drossaert, C. H. C. (2017). Development of the Digital Health Literacy Instrument: Measuring a broad spectrum of Health 1.0 and Health 2.0 skills. *Journal of Medical Internet Research*, 19(1), e27. <https://doi.org/10.2196/jmir.6709>

van Gemert-Pijnen, J. E., Nijland, N., van Limburg, M., Ossebaard, H. C., Kelders, S. M., Eysenbach, G., & Seydel, E. R. (2011). A holistic framework to improve the uptake and impact of eHealth technologies. *Journal of Medical Internet Research*, 13(4). <https://doi.org/10.2196/jmir.1672>

Vis, C., Bührmann, L., Riper, H., & Ossebaard, H. C. (2020). Health technology assessment frameworks for eHealth: A systematic review. *International Journal of Technology Assessment in Health Care*, 36(3), 204-216 <https://doi.org/10.1017/s026646232000015x>

Walsh, J. C., Corbett, T., Hogan, M., Duggan, J., & McNamara, A. (2016). An mHealth intervention using a smartphone app to increase walking behavior in young adults: A pilot study. *JMIR mHealth uHealth*, 4(3), e109. <https://doi.org/10.2196/mhealth.5227>

Warth, L. L., & Dyb, K. (2019). eHealth initiatives; the relationship between project work and institutional practice. *BMC Health Services Research*, 19(1), 520. <https://doi.org/10.1186/s12913-019-4346-0>

Wong, E. L. Y., Cheung, A. W. L., Wong, A. Y. K., Xu, R. H., Ramos-Goñi, J. M., & Rivero-Arias, O. (2019). Normative profile of health-related quality of life for Hong Kong general population using preference-based instrument EQ-5D-5L. *Value in Health*, 22(8), 916-924. <https://doi.org/10.1016/j.jval.2019.02.014>

World Health Organization. (2017). Global diffusion of eHealth: making universal health coverage achievable: report of the third global survey on eHealth. World Health Organization.

Wu, J. M. T., Srivastava, G., Jolfaei, A., Fournier-Viger, P., & Lin, J. C. W. (2021). Hiding sensitive information in eHealth datasets. *Future Generation Computer Systems*, 117, 169-180. <https://doi.org/10.1016/j.future.2020.11.026>

Yang, B. X., Xia, L., Huang, R., Chen, P., Luo, D., Liu, Q., & Wang, X. Q. (2021). Relationship between eHealth literacy and psychological status during COVID-19 pandemic: A survey of Chinese residents. *Journal of Nursing Management*, 29(4), 805-812. <https://doi.org/10.1111/jonm.13221>

Yusif, S., Hafeez-Baig, A., & Soar, J. (2017). e-Health readiness assessment factors and measuring tools: A systematic review. *International journal of Medical Informatics*, 107, 56-64. <https://doi.org/10.1016/j.ijmedinf.2017.08.006>

Yang, C. W. (2016). Orchestrating knowledge-creating networks: lessons from Taiwan's health services sector. *Technology Analysis & Strategic Management*, 28(6), 703-716. <https://doi.org/10.1080/09537325.2016.1141194>

Zhao, R., Yan, R., Chen, Z., Mao, K., Wang, P., & Gao, R. X. (2019). Deep learning and its applications to machine health monitoring. *Mechanical Systems and Signal Processing*, 115, 213-237 <https://doi.org/10.1016/j.ymssp.2018.05.050>

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