Health care information systems - the outcomes of the integrated use of health information

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Abstract. The objective of this study is to formulate a clearer picture of how a regional healthcare information system affects the completeness of patient health care and health care delivery. The purpose is to study how the implementation of regional health information systems has influenced outcomes in health care delivery in one hospital area in Finland. The essential concepts in this study are health care information systems and outcomes. The research consists of four different phases. Research material will be processed through qualitative and quantitative research methods and statistical tests. There is a need for further evaluation of health care information systems and their outcomes.

Keywords: regional healthcare information system, outcome, qualitative research methods, quantitative research methods

1. Introduction

Priorities for the present decade ought to be set based on the emerging dominant trends in health care, including the shift towards shared or integrated care, where a team of professionals across all levels of the health care system hierarchy are responsible for the health care of an individual. In addition to the requirement for efficient and secure access to the Integrated Electronic Health Record (I-EHR) of health care professionals, this necessitates the development and deployment of Regional Health Information Networks (RHINs). During the past decade, regional health information networks have been established in many regions throughout the world. Most European countries today have set up strategic IT plans that focus on the establishment of an RHIN. [1-3] According to previous national and international research, communities are enthusiastically moving forward with health information exchange to create regional health information organizations (RHIOs) or regional health information infrastructures (RHINs) to improve the efficiency, quality, and safety of care. These RHIOs promote health information exchange electronically and provide secure, ubiquitous access to complete health care information between different actors, thus improving administrative efficiency. [4-10] According to previous research, professionals now have better access to health care information concerning patient health information, research results, patient health records, and medical history. [5-7], [10-12] Having the right information in the right place supports quality decision-making. [13-15], [9-12] Regional health information exchange has improved the continuity of care, supply of effective care, quality of care, patient safety and cost-effectiveness [1], [4-5], [9], [10-12], [17-19], decreased duplicated research, and improved care planning and coordination. [1], [5-6], [10-13]
2. Objectives

The objective of this study is to formulate more clearly a concept of how regional health care information systems affect the completeness of patient health care and health care delivery through their significant benefits and outcomes. How do regional health care information systems affect patient care, health and welfare itself, the effectiveness of health care, outcomes and essentially the quality of life. This study consists of four phases. The purpose of the first phase is to find out how health information systems have been investigated, what has been investigated, what kinds of effects have been achieved and what the outcomes are. The purposes of the second and third phases are to describe and identify the effects of the regional health information systems using quantitative statistics for 2004 – 2008 in a specific geographic area. The research question in the second phase is how regional health information systems have affected health care delivery, investigating particular outcomes from the viewpoint of the organization, professional and patient. The research question in the third phase is how the implementation of regional health information systems with a difference in utilization rates has influenced the outcomes in health care delivery comparing two municipalities, one that has used the regional health information systems often and one that has not. The criterion for the comparison groups is that the municipality is comparable in geography, population and personnel, and that the occupation structure is similar. There should be no significant structural differences in data collection between the chosen municipalities. The purpose of the fourth phase is to find a deeper understanding of the research results and the outcomes received in the first, second and third phases through qualitative interviews with the users of regional health information systems in fall 2009, when the regional health information system is to be used as a part of the normal workflow.

The essential concepts of this study are health care information systems and outcomes. Health care information systems are socio-technical systems, including users, customers, environment, tasks, software and hardware. [20-21] Outcomes are the results of health care processes. Outcome measures are frequently mentioned as process indicators measuring the outcome of health care delivery. [22] A variety of traditional design, data collection and analysis approaches have been used in outcome research, but a rich array of methods has also been developed that are not within the traditional research framework. [22-23] Additionally, it is difficult in some cases to determine a causal connection between outcomes and health care interventions, because factors outside the health care systems affect outcomes in many different ways. The multidisciplinary nature of outcome research suggests that this evolving area will offer opportunities for methodological creativity in the years ahead. [22]

3. Materials and Methods

The research design in the first phase is a qualitative systematic review. In this study, the systematic review of health care information technology and implementation of health information exchanges will focus on research on regional or national health information systems or organizations. Research material will be collected using Cinahl, PubMed, Medline, Inspec, and Cochrane Library databases. The research design in the second and third phase is a quantitative outcome research. Outcome research is designed to document the effectiveness of health care services and the end results of patient care. In this study, it will be used to measure changes in outcomes differing
from one point in time to another. The data is composed of viewed referrals to regional health information systems in 2004 – 2008 and computer-based statistics and reports of subsequent outcomes such as laboratory and radiology research and appointments, and referrals. The research design in the third phase also includes comparison groups. The research design in the fourth phase uses a qualitative interview approach. The research material will be collected through unstructured interviews or semistructured interviews in fall 2009, focusing on the particular users and other interest groups of the regional health information systems, where the use of the system is part of the normal workflow. The research material will be processed by means of qualitative and quantitative research methods and statistical tests.

4. Discussion

This study is meaningful both nationally and internationally, since effective information exchange will be the most important part of the development of health information systems in health care delivery in the near future. This service allows end users to perform real-time clinical collaboration with the exchange of text, structured data, voice and images across the limits of a single region. Furthermore, information and communication technology in health care has been found to improve information use and access to it by health care professionals working in collaborative patient health care either simultaneously or at different times. It is also important to research how the patient benefits are received when developing regional integrated use of health information, because increasingly customer care requires better information of one’s own health conditions and taking steps for pro-active prevention. Research on health care information systems is important because the systems are used within a variety of health care professional networks, in health care management and administration, and as tools of communication and decision making. In the near future, health care delivery will unquestionably be dependent on the functionality of health care information systems. Furthermore, a lot of investment has been made in health care information systems and the applications may cause profound and fundamental changes in health care organizations or entire health care service systems and processes. Health care information systems have been researched extensively both nationally and internationally, but the real benefits or usefulness of evaluation information are incomplete and short-term. In Finland, there is a fairly systematic and comparative knowledge of health care information systems. This indicates the need for further evaluation of health care information systems and their outcomes. Outcome research is one of the expanding fields in health care.

References


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