
Bridging Clinical and Non-clinical Health Practices: opportunities and challenges

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Abstract

There has been a growing interest in the HCI community to study *Health*, with particular focus in understanding healthcare practices and designing technologies to support and to enhance these practices. A majority of current health studies in HCI have focused on either clinical settings, such as hospitals and clinics, or non-clinical spaces, like patients' homes and senior centers. Yet, there has been little work investigating how patient care in clinical and non-clinical settings connect with each other. Building on the *illness trajectory* concept, this workshop aims to explore the interplay between, and the challenges and opportunities in designing healthcare technologies for bridging the clinical and the non-clinical settings, as well as their impact on the continuum of patient care

Keywords

Health Practices, Clinical setting, Non-clinical Setting, Chronic Care, Illness Trajectory

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design, human factors

Introduction

There has been a growing interest in studying and designing health technologies in the field of HCI. Many studies examined clinical practices and many others designed technologies to support health-related practices that have direct impact on patient care [e.g. 2,7,12]. This interest is shared throughout the world. Internationally, many developed countries such as the US, Canada, Western European countries and Japan are struggling to meet the mounting healthcare needs of an aging population. Technologies are thus designed to help shift the burden of care from the clinical setting to home or other non-clinical settings. In contrast, Africa, India, and other developing regions face a shortage of healthcare providers. In these countries, technologies are used to improve access to health services by giving community health workers more tools to treat health conditions from within a community setting, as well as give people information about their own health conditions. In all these cases, technologies can offer a seamless transition to bridge the health practices between clinical and non-clinical settings.

Currently, studies of healthcare systems focus on a variety of systems including large-scale in-hospital systems such as Electronic Medical Records (EMR) [2], computerized physician order entry (CPOE) [16] and nursing communication tools [14], to systems that are designed for use outside clinical settings such as those for the management of chronic conditions [9] and personal health information [11]. These systems serve different purposes, and they all have the potential to benefit patient care through improving clinical practices conducted in hospitals and clinics, or facilitating various self-care activities in patients' homes and other non-clinical settings.

Prior studies indicate not only the complexity and uniqueness of healthcare practices but also a variety of issues both within and outside clinical settings. Specifically, issues such as mobility [3], temporality [12], information flow [14], and workflow [4] have been identified to be critical in supporting work practices in clinical environments. Issues such as health information management [10, 11], and home care for chronic conditions [9] have also been extensively researched. More recently, the use of mobile and pervasive technologies for monitoring and tracking health has gained significant traction in both research and the commercial space.

While these previous studies provide valuable insights into understanding healthcare practices in targeted settings, there has only been limited work that examined how clinical and non-clinical health practices connect and interplay in the overall patient care trajectory.

An illness trajectory refers "*not only to the physiological unfolding of a patient's disease but to the total organization of work done over that course [of illness], plus the impact on those involved with that work and its organization*" [13, p.8]. This term has generally been used to describe a patient's illness during a single hospitalization. However, given the growing ubiquity of chronic diseases, healthcare is no longer an *ephemeral* service. Rather, it is often a long-term endeavor that takes place in diverse settings, moving back and forth between clinical and non-clinical environments. The activities of clinical care and non-clinical care collectively constitute the comprehensive illness trajectory for a patient. Therefore, we believe an understanding of the broader context of illness

trajectories is necessary to meet the needs of today's healthcare system – a system that is often comprised of distributed healthcare services taking place not only in hospitals and doctor's offices, but also in patients' homes and community centers. In essence, health practices conducted in both clinical and non-clinical settings must be considered and technology should be designed to achieve a continuum of patient care.

The recent initiative on Electronic Health Records (EHR) was intended for maintaining patients' life-long records in both clinical and non-clinical practices [6]. As a result, stakeholders such as doctors, nurses, caregivers and patients themselves collectively contribute to the patients' long-term illness trajectory [5]. More recently, there has been a rise in Personal Health Record (PHR) systems [15], where patients document and upload their self-care activities for clinicians to use, and at the same time, clinicians could release professional records for guiding self-management activities that occurred outside the clinical settings. Other systems that explore communication of health information from home to clinical setting [1] and vice versa [8] also exist.

Developing systems that bridge clinical and non-clinical settings is no trivial task, as health practices, knowledge, stakeholders, environment, constraints, expectations, and liabilities are all distinctly different in these two environments. Therefore it is necessary to bring together researchers, designers, medical practitioners, and other stakeholders to design interactive systems that can bridge the trajectory work across the two settings. It is also important to consider the implications and impacts of the systems designed for one setting (e.g., clinical setting) on the other setting (e.g., non-clinical setting).

Many issues remain open when designing healthcare systems for bridging health practices in clinical and non-clinical settings. For examples, to design a patient monitoring system for home use, we need to consider how to capture critical information that is meaningful for healthcare professionals to use, and how to visualize the home-monitored data so physicians can effectively engage and utilize the information during their busy schedules. Similarly, when using the EMR system to share patient records with patients, how can we maximize the likelihood that the patients correctly interpret the medical information? Other questions include: what consequences may result when designing systems for supporting healthcare practices in non-traditional settings such as senior centers? How may cultural issues, such as clinical culture vs. domestic culture, affect the use of the healthcare technologies designed for bridging the two settings? These questions are important when designing technologies to bridge between clinical and non-clinical practices.

Workshop Goals

We expect this workshop to benefit technological design for achieving continuum of care, and to provide valuable insights into developing interoperable healthcare systems that can support trajectory work across settings. Specifically, we aim to:

- provide an opportunity for researchers, designers, and practitioners in relevant fields, such as HCI, CSCW, pervasive health, medical informatics and general medicine to share and learn from each other's experiences,
- understand health practices that occur in different settings and critical challenges and constraints in designing for these settings,

- discuss the practical experience of using technologies in settings where they are not designed for, e.g., possible uses of non-clinical technologies in clinical settings, or vice versa,
- brainstorm issues that span different healthcare settings for achieving comprehensive trajectory work and converging on design principles that may be applied to multiple settings,
- elaborate the challenges and opportunities in supporting transitions between and integration of health practices in clinical and non-clinical settings, and
- explore possible cultural issues that may affect the design of healthcare technologies for bridging clinical and non-clinical practices.

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