Patient-Provider Communication: Improving Patients' Comprehension of Their Care

Ji Youn Shin, John Marshall, David Bozaan, Franc Nunoo-Quarcoo, Sun Young Park
University of Michigan, Ann Arbor, Michigan, USA

Abstract

While patients rely on in-person interaction with their clinicians to know more about their care, frequent in-person interactions with clinicians are rarely available to patients due to time constraints. Limited in-person interactions can result in passivity and frustration for patients and can negatively impact the quality of patient satisfaction. Research is needed to understand the basic needs of patients during their hospital stay and provide design guidelines that empower patients with clear information. We conducted a field study to identify significant issues that cause patients to remain passive communicators and prioritize patients' needs in inpatient settings. Findings from this field study with patients and clinicians guided us to develop design considerations for a prototype tablet-based application. We then designed a prototype which aims to maximize the available time by fostering valuable communication between clinicians and patients. In this paper, we present major findings from the field study and introduce features of a prototype tablet-based application for hospitalized patients.

Introduction

Active engagement by patients in a hospital setting has been shown to have an impact on both health outcomes and patient satisfaction [1–3]. However, there is often an informational and temporal asymmetry in the communication between clinicians and patients [3]. Informationally, patients have limited access to information sources while clinicians have access to vast amounts of information with their use of multiple communication artifacts. Temporally, patients have adequate time to communicate with clinicians, but clinicians have limited time to manage a broad range of tasks related to patient care, including the time needed to directly communicate with their patients.

Also, even though patients are in a vulnerable situation regarding their state of mind and physical condition, they are still expected to understand, remember, and report their symptoms appropriately when they interact with clinicians [4]. To support patients' improved understanding of their hospital stay, many educational materials about medication, treatment processes, and discharge summaries have been designed. Unfortunately, since information packets are rarely tailored to each patient [5], and traditional information materials, such as printed materials make dynamic delivery difficult, existing information packets are not frequently used [6]. Although patients may have access to various information materials, it is difficult to prioritize their needs. Ironically, information resources designed to aid patients' hospital stays often overwhelm them, and thereby encourage patients to be passive communicators.

Clinicians are required to verbally communicate complex medical information such as patients' symptoms, treatment plans, and medication protocols in a limited amount of time. Since there is no systematic way of sharing information across the hospital [5], patients expect to have an in-person conversation with clinicians to answer their questions. Without the clinician's verbal explanation, patients often remain uninformed about their care team, treatment procedure, and laboratory results conducted during their hospital stay. Unfortunately, due to the pressure of time constraints, such in-person interactions are not always available for patients.

There is also the issue of the patients perceiving a lack of care because the majority of clinicians' efforts are invisible from the patients' perspective [7]. To interact with each patient during their rounds, clinicians have to put lots of time and energy into reviewing patients' medical records through an Electronic Medical Record (EMR) system and work collaboratively with other clinicians across the hospital to make medical decisions [8]. However, most of the clinician's work is poorly understood by and less visible to their patients. This invisibility causes patients both stress and anxiety, and eventually reflects in poor patient satisfaction [9].

To rebalance the active nature of clinicians' work and the passiveness of the patients' situation, much work has been done in Human-Computer Interaction (HCI), Health Informatics, and also in the medical context. Prior research has shown that technology can help educate patients and provide additional understanding about their treatment and health status during their hospital stay [10]. Also, there is an important set of medical informatics studies that pursue effective communication of patients' care information including efforts to enhance EMR systems [11,12]. However, most of the existing EMR systems are designed for clinicians and healthcare administrators, rather than for patients.

Therefore, a more patient-centered perspective is needed to investigate the current problems that may cause a significant imbalance in communication between clinicians and patients to improve both patients' understanding of their process of care delivery and the clinician's work.

In this study, we conducted field observations and informal interviews to identify significant issues that caused patients to remain passive communicators and prioritize patients' needs in inpatient settings. Findings from a field study led us to develop design considerations for a prototype tablet-based application. We then designed a prototype which aims to maximize the limited time by fostering valuable communication between clinicians and patients.

Related Work

Patient Engagement in the Patient Room

The needs and benefits of sharing information with patients in the care process have been well-studied. Fowles and colleagues found that many patients are interested in viewing the information about their care, regardless of economic status or level of education [13]. Merely improving information about care delivery in the healthcare environment has been shown to have a positive impact on patients' experience [4]. Also, Skeels and colleagues discovered that patients wanted to better understand their treatment regimen and to have a more enhanced way of communicating with their care team [14].

Currently, the most frequently and widely used information delivery system in the patient's room is a whiteboard [15]. By using a whiteboard, care providers update information, such as the name of clinicians, caregivers' information, daily goals, and additional notifications. However, since there is no standardized way to write information among the clinicians, keeping the data up-to-date is challenging and results in dysfunction where the whiteboard does not function as an efficient informational source for patients. Also, many inpatient units have information packets, such as leaflets, brochures, or television channels to help the settlement of newly admitted patients. These materials contain a vast amount of data and are rarely tailored to each patient. The need for patients to comprehend there care and understand what signs and symptoms of complications to their diseases to look for often overwhelms and interferes with an effective self-management of their health information [6].

Researchers have paid attention to the value of providing personalized information for each patient given the inefficiencies of existing materials. Prior studies offer a limited view of patient-clinician communication, as they mainly focus on educating patients about medical-related knowledge and treatment instruction [13,16]. However, some studies investigate the patients' needs for understanding the care delivery procedure. For example, Wilcox and colleagues proposed a patient-facing, electronic display that allows the patient to refer to their care procedure from their room [17]. The researchers investigated how a patient-centered information display can deliver useful information to a patient during an emergency department (ED) visit and received positive feedback from both patients and providers. In a pilot study by Weiland and colleagues, the researchers developed a personalized patient's schedule to provide a care plan and incorporate appropriate treatments with patients' opinions [18]. In the context of Pediatric Bone Marrow Transplant (BMT), researchers developed a health information technology (HIT) tool. The tool is used by inpatients at a BMT care facility and allows both patients and caregivers to access information related to their treatment process [19].

Potential Impact of Sharing Information

Information technology may make it easier for patients to refer to their medical records. Many studies show that having enhanced information available to patients about their care improves patient experience [17,20]. However, little research has yet been conducted on the types and levels of information that could be shared, and how it affects both patients and clinicians.

People can become overwhelmed by available information because of its terminology, situational complexity, and the sheer volume of data [1,6]. In other words, not having information causes stress and anxiety, but having too much information also negatively affects people, especially with a stressful situation, such as a hospitalization. Charles and colleagues investigated the types of information that physicians might communicate to patients, including benefits and potential side effects of various treatment options, treatment procedures, and accessible resources for patients and their caregivers [21]. On the clinicians' side, such sharing of information possibly generates frequent opportunities to receive more questions from patients or caregivers. Since clinicians perceive lack of time as a challenge that limits patient input in their care [8,22], physician perspectives on medical information sharing should be a critical concern. Wilcox and colleagues investigated the physicians' attitudes on sharing clinical data with patients during care in urgent care settings and found physicians felt favorably toward information sharing

about medications and the care team [17]. However, they found concerns related to the sharing of diagnostic data types, such as lab results that require accurate interpretation of data types. Delivering tailored care information to patients is challenging to do well with a lot of non-visual communication tools, such as text because there are various treatment procedures, and patients have different levels of literacy and knowledge [5]. Therefore, there is a significant research gap in this context regarding determining appropriate amounts of information and methods of sharing information with patients under time constraints.

Study Methods

Study Context

We conducted an ethnographic field study in the Internal Medicine department at Michigan Medicine (the hospital system of University of Michigan) for three main reasons. First, because of the broad reach of the hospital, patients' illnesses show various levels of complexity and required lengths of stay. Second, within Michigan Medicine, we focused on the Internal Medicine department, which provides care to patients experiencing multiple chronic illnesses and hospitalizations across their adult lifespan. This allowed us to see problems that were common across illness and patient treatment histories. Third, Michigan Medicine is one of the largest academic medical centers in the United States, and its staff is already accustomed to research projects. A large number of clinicians recognize the necessity of improving patients' comprehension of their treatment procedure and facilitating information exchange with patients. These three factors provided rich data for ethnographic observations and interviews.

Data Collection

Data was generated mainly through observations and interviews in inpatient settings. The goal was to have an in-depth understanding of patients' communication behavior and needs in the context of inpatient settings. We focused on moments when patients ask questions to their clinicians, main issues of conversations between patients and clinicians, and how patients respond to the clinicians' information delivery. We also carefully observed communication tools that were used to exchange medical information and knowledge during the communication. In total, 60 hours of observation was conducted over a period of seven months, from October 2016 to January 2017. Each observation session lasted approximately three to five hours. At inpatient settings, we observed and interviewed 12 patients (3 female). We also shadowed 6 physicians (3 female) and 11 nurses (10 female) and had informal interviews with all of them. During the observation, we observed clinicians during daily routines, such as morning rounds and discharge meetings to understand the nature of their work. We also stayed with the patients in their hospital room to observe their interactions with caregivers and clinicians. Additionally, we conducted informal interviews with both patients and clinicians whenever the situation allowed. Interview questions for patients were designed to examine patients' behavior when they communicate with clinicians. For example, we asked patients "What are the most frequently asked questions from clinicians, and how comfortable do patients feel articulating their physical or mental status, such as their current pain score or feelings?", and "How do patients record and organize information during their hospital stay?" Data was collected through handwritten notes during the fieldwork. We took photographs of the hospital environment, communication artifacts, and each stakeholder's workflow after receiving verbal consent from participants. After we collected the data, we utilized an Insight Sorting method to narrow down main focuses into four issues. Insight Sorting revealed patterns of our findings and led further discussions [23].

Results

Overall Findings

First, repetition of information was one of the most frequently observed problems. Repeatedly answering the same questions and listening to the same explanations frustrated patients. Since patients see multiple clinicians on their care team, the patients are asked to report the same information to each clinician. Based on the overall issues we discovered during the fieldwork, patients had to describe their pain and feelings multiple times. Also, patients were verbally informed about their vitals and lab results by their clinicians. Patients were unable to prepare questions before they met with their clinicians. This also hinders conversations with clinicians and prevents patients from asking questions or gathering new information. This problem led us to consider the necessity of describing the day's activities for minimizing redundant questions from clinicians, such as whether patients already met with specific clinicians or took particular medical tests.

Second, clinicians' work is invisible to patients and patients are not aware that their care team is working for them when they are not present in the room. Patients usually stay in their room in bed during their hospital stay.

Therefore, their only contact with clinicians is when clinicians visit the patient's room. Based on the discoveries made during our fieldwork, patients were unable to see their clinicians' work, such as discussion with consultants about patients' treatment options or discharge paperwork, which takes a considerable amount of time from physicians. This problem led us to consider providing information about medical trials in which patients are currently enrolled to make invisible clinicians' work more visible to patients.

Third, patients have limited access to information artifacts. While clinicians have multiple communication platforms, such as EMR, phones, or pagers, patients don't have access to any information artifacts other than a single nurse call button or whiteboard in the patient's room. From our field study, it was apparent that verbal interactions are the primary communication medium and information can be quickly forgotten if it is not recorded. Also, patients had to make multiple requests before action was taken on their needs, such as repositioning their bed or having more blankets. These issues led us to consider providing more detailed options to address patients' needs.

Fourth, patients desire human interaction during their hospital stay. Patients are not in their best condition, either mentally and physically during their hospitalization, which can cause anxiety and create a desire to interact frequently with their care team. In our field study, we saw many patients who wanted to obtain reliable information from human beings, not from a piece of paper or static digital device, such as a monitor. However, it was impossible for them to interact frequently with clinicians under the limited human and time resources. Patients had only a few minutes of interaction time with their physician during daily rounds. This allowed us to consider a way to report patients' feelings and moods as a reference for clinicians to provide more appropriate consultation for their patients.

Design Overview

We created a prototype tablet-based application to use the limited resource of time in the healthcare service by fostering valuable communication between clinicians and patients. From our field study, we found the benefits of having a more valuable conversation between patients and clinicians. This led us to consider an overall concept of our design prototype. If the time constraint is hard to change, it is essential to utilize in-person interaction in meaningful ways with valuable conversations. This prototype aims to provide access to medical treatment procedures, information related to the patient's hospital stay, and provide a way to address patients' needs. Using the application, patients could not only merely receive information, but also prepare for their conversations with clinicians with better access relevant information. It is designed to draw related details from the EMR system used at Michigan Medicine.

Provide multiple options of communicating patient's needs

Currently, when patients need help, they are asked to call a nurse by pushing a single button on the bedside remote control. Although having a single button to address patients need is the easiest way, the limited options for communication give rise to multiple situations in which the needs of patient are not appropriately met. Providing more calibrated possibilities for expressing patients' needs could offer an opportunity to communicate more clearly. Also, instead of physically coming to see the patient and check their request, clinicians can be aware of more details of patients' needs through the system currently in place for other forms of communication, such as a pager or EMR. This may reduce clinicians' workload as well as wait time for patients.

Provide information on ongoing treatment procedures

In most of the cases, patients in inpatient settings are involved in multiple treatment processes. However, until each care team member physically enters the patient room and verbally informs them, patients are often unaware of the treatment processes in which they are currently enrolled, due to the amount of information in this complicated situation. To help patients be better informed about their treatment process, our design prototype provides real-time access to detailed information about the most critical procedure at the particular time. Patients who need more details can explore information by themselves through the application in their room instead of calling a nurse to ask questions on their current status at every turn.

Provide a way to inform patient's current feelings

During their hospital stay, patients are asked to describe their core symptoms, such as pain score, nausea, shortness of breath, eating, or sleeping to multiple clinicians. However, the limited time for interactions often does not provide patients with enough opportunities to address details about their status. Also, patients usually have to repeat the same answer for many clinicians. This function provides a way to report detailed information about their current feelings, allowing patients to store and review daily, and share this information with clinicians. Patients could

choose their current symptoms from multiple options available by simply touching screens, and it is reported to their clinicians as a reference for future conversations for the rest of the day.

Provide a way to keep daily basis record of clinical activities

Considering the overall concept of our design and potential impact, this function is the most developed feature of the application as a prototype. It is apparent that a whiteboard and a file of the printed materials have been the primary resource for capturing information for patients in their room. However, existing information, such as information on whiteboards are written without standardized details and not actively used by patients on a regular basis. After clinicians leave patient's room, it is almost impossible for patient to recall all the details of information because most of the information exchange happens verbally. This function provides access to a summary of the clinical treatments, symptoms, patients' requests, and patients' records so that patients are better informed when they communicate with clinicians. If patients want to view the prior history, they could click the prior dates to see the records from previous days on a timeline. Also, when patients are discharged, they could use the contents from this tool as a reference to consult with their PCP, specialists or other clinicians in the future.

Figure 1. Multiple options of communicating patients' needs and Daily basis record of clinic activities

Limitations

Our study has several limitations that should be noted. First, in framing our ethnographic study, we accounted for the differing levels of patients' familiarity with scientific terminology. Patients came from a wide range of socio-economic backgrounds and family structures. Age and educational backgrounds are also varied, with some patients reporting no higher education while others are reporting several advanced degrees. Because different demographic data produce different patient experiences, we have limited the scope of this project to focus on common issues for patients across various demographics. Second, our study only covered commonly revealed issues across the different diseases. This study does not include the specialty of a particular pathology, such as special treatment, medications, or other support that may be required by patients with specific conditions. Finally, we also acknowledge that IT literacy is not yet universal among the patient population and that providing access to tablets for all patients presents logistical and financial challenges to hospitals. However, we hope to be able to investigate if proposed benefits outweigh these challenges, in the near future.

Conclusion

In this study, we identified that the main problem with communication between patients and clinicians is the combination of limited access to information related to patients' hospital stay and clinicians' time constraints. Based on the problems and needs identified in our study, we presented a prototype tablet-based application to improve patients' understanding of their hospital stay in four main themes: (1) Provide multiple options of communicating patient's needs, (2) Provide information on ongoing treatment procedures, (3) Provide a way to inform patient's current feelings, and (4) Provide a way to keep daily basis record of clinical activities. Our approach to introducing a prototype tablet-based application for hospitalized patients aims to allow patients to be better prepared to have more productive in-person conversations with clinicians. It would also help avoid repetition and foster greater understanding between patients and clinicians. Next steps of this study include refining the design prototype and creating a more developed tablet-based application. We hope to test our prototype in inpatient settings with actual medical information of each patient in the near future.

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