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Patient–Clinician Communication: The Roadmap for HCI

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Abstract

Effective communication between patients and their clinicians during clinical encounters has a positive impact on health outcomes. Technology has the potential to help transform this synchronous interaction, but researchers are still at early stages of developing interventions to assess and improve patient–clinician communication. In this workshop, we envision opening up a dialogue among researchers and clinicians who wish to discuss directions for future research in this domain. In particular, the workshop will focus on exploring how technologies available today, as well as projected for the future, can support the communication needs of clinicians and patients.

Keywords

Health communication; communication technologies; patient–clinician communication; Human Factors

Introduction

Effective communication between patients and their clinicians during clinical encounters is critical in achieving positive outcomes of patient care. For example, effective

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communication during history-taking and care planning has been positively correlated with emotional health, symptom resolution, pain control, and physiologic measures (i.e., blood pressure and blood sugar level) [11]. Still, training clinicians to improve their communication skills remains a grand challenge. Although immersive communication training is part of clinical education, continuing to assess and enhance communication skills—both at the point of care and throughout a career—is quite difficult.

Meanwhile, technologies that enable new modalities and practices of human communication are rapidly evolving. Researchers have developed visualizations of turn-taking in clinical encounters [1], immersive telepresence applications [8], novel social signal processing applications [9], and interaction and presentation techniques utilizing the human body in contexts that transcend boundaries of space and time [8]. With these rapidly evolving technologies come opportunities to transform health communication. This workshop will focus on a critical part of this transformation: technologies to support patient–clinician communication in clinical encounters.

Communication Context

Many exciting opportunities exist to design innovations that support patient–clinician communication across a range of scenarios. For example, technologies to support asynchronous communication outside of clinical encounters, such as email, SMS, and patient portals, are being increasingly used for follow-up, education and data reporting. We believe that academic forums addressing the use of these asynchronous communication technologies are immensely important for the HCI community [14]. However, to appropriately scope the present workshop, we focus on synchronous communication—directed, simultaneous interaction between a patient and their clinician. This includes distributed, as well as collocated, communication that is both verbal and nonverbal.

Workshop Goals

The workshop brings together a multidisciplinary group of researchers from HCI, clinical practice, and other fields who share an interest in exploring novel technologies for this domain. The primary goal of the workshop is to collaboratively outline future opportunities for HCI research focused on promoting effective patient–clinician communication. To achieve this, we will:

- Identify emerging technologies that can play a role in supporting different facets of communication in clinical encounters.
- Discuss outcomes that can be measured with these technologies.
- Explore sociocultural contexts for using and evaluating the technologies.
- Explore implications of novel technology adoption on clinical workflows and practices and potential barriers to adoption.
- Construct a roadmap for HCI research in patient–clinician communication.

To foster participant interaction and learning from one another's experiences, each workshop participant (organizers and attendees) will share their perspectives on the use of state-of-the-art technologies in their research in this area.

Patient–Clinician Communication Goals

Workshop discussions will be grounded in key communication goals of patients and clinicians during clinical encounters. Examples of these goals include enabling clinician awareness of symptoms, patient awareness of care activities, and shared decision-making. While such goals have persisted over decades, technological interventions designed to support them are only recently beginning to take shape.

Clinician Awareness of Patient Symptoms

Clinical encounters provide a rich, dynamic opportunity for communication that occurs at only a single point in time over the course of a patient's illness. Still, symptoms that affect patients' quality of life are often underestimated or even missed during the encounter [5]. For example, pain is a frequent and recurring symptom in many illnesses. To improve the accuracy of patient-reported pain, some instruments use illustrated facial expressions to indicate degrees of pain [10]. Patients use this visual scale to match a face to their perceived pain level. Can data from self-tracking tools used by patients at home enhance clinician awareness of levels of patients' pain in discussion at the clinic? Could vision-based techniques be used to read and capture changes in posture and facial expressions, to assist in measuring and reporting pain levels? How could technologies be designed to protect privacy while utilizing continuous image analysis?

Patient Awareness of Care Activities

Recent work has found that providing summaries of medical consultations results in better adherence to care recommendations [7]. However, few technologies provide patient-oriented summaries of appointments with providers, medication therapies, and results of events occurring throughout patient care [2] [11]. Can technologies evolve to capture and create these summaries in a patient-friendly manner?

Shared Decision-Making

Often, patient care involves treatment decisions that are made over the course of careful discussion between patients and their clinicians. Patient participation in decision-making has been associated with improved functional status and clinical outcomes [6], yet patient preferences for involvement in decision-making vary according to the patient's coping style and life circumstances [3] and decisions are often made in consultation with family members. Can technologies be created to provide insights that allow both patients and clinicians to draw upon these factors? Can telepresence technologies be designed to include members of an extended care team in consultations?

Measuring Communication Quality

Clinicians' clear explanations delivered with compassion are associated with reduced patient anxiety [13]. Despite the importance of patient–clinician communication, the quality of these interactions is still difficult to measure. Interaction analysis systems (IAS) attempt to label observed nonverbal cues and behaviors on a micro scale and holistically assess communication success on a macro scale [3]. Developing IAS that can assess both verbal and nonverbal communication can help researchers evaluate communication quality, as well as the effectiveness of interventions aimed at enhancing patient–clinician communication.

Conclusion

We believe that there are multiple opportunities for the HCI community to create and study the use of technologies to support patient–clinician communication. These opportunities have the potential to transform patient care. By discussing this important topic, we hope to define a roadmap for ways to collaborate at the boundaries of HCI and patient–clinician communication research.

References

1. Angus D, Watson B, Smith A, Gallois C, Wiles J. Visualizing conversational structure across time: Insights into effective doctor–patient consultations. *PloS One*. 2012; 7(6):e38014. [PubMed: 22693629]
2. Bickmore T, Pfeifer L, Jack B. Taking the time to care: empowering low health literacy hospital patients with virtual nurse agents. *Proc. ACM Computer-Human Interaction Conference*. 2009:1265–74.
3. Butow PN, Dunn SM, Tattersall MH, Jones QJ. Computer-based interaction analysis of the cancer consultation. *British Journal of Cancer*. May. 1995; 71(5):1115–21. [PubMed: 7734311]
4. Charles C, Gafni A, Whelan T. Decision-making in the physician-patient encounter: Revisiting the shared treatment decision-making model. *Social Science & Medicine*. Sep. 1999; 49(5):651–61. [PubMed: 10452420]
5. Deandrea S, Montanari M, Moja L, Apolone G. Prevalence of undertreatment in cancer pain. A review of published literature. *Annals of Oncology*. Dec. 2008; 19(12):1985–91. [PubMed: 18632721]
6. Harvey R, Kazis L, Lee A. Decision-making preference and opportunity in VA ambulatory care patients: Association with patient satisfaction. *Research in Nursing & Health*. Feb. 1999; 22(1):39–48. [PubMed: 9928962]
7. Morris L, Halperin J. Effects of written drug information on patient knowledge and compliance: A literature review. *American Journal of Public Health*. 1979; 69(1):47–52. [PubMed: 105645]
8. Pande RU, Patel Y, Powers CJ, D'Ancona G, Karamanoukian HL. The telecommunication revolution in the medical field: Present applications and future perspective. *Current Surgery*. 2003; 60(6):636–40. [PubMed: 14972207]
9. Pentland, AS. *Honest Signals: How They Shape Our World*. MIT Press; Cambridge, Mass: 2008.
10. Revill SI, Robinson JO, Rosen M, Hogg MIJ. The reliability of a linear analogue for evaluating pain. *Anesthesia*. 1976; 31:1191–8.
11. Skeels M, Tan D. Identifying opportunities for inpatient-centric technology. *Proc ACM International Health Informatics Symposium (IHI)*. 2010:580–589.
12. Stewart M. Effective physician–patient communication and health outcomes: a review. *Canadian Medical Association Journal*. May 1; 1995 152(9):1423–1433. [PubMed: 7728691]

13. Street RL, Makoul G, Arora NK, Epstein RM. How does communication heal? Pathways linking clinician– patient communication to health outcomes. *Patient Education & Counseling*. Mar; 2009 74(3):295–301. [PubMed: 19150199]
14. Zheng K, Zhou X, Chen Y, Tang C, Wilcox L. Opportunities and challenges in designing interactive systems for patient–provider communication. *Proc Workshop of Interactive Systems in Health*. 2012

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