Human-Centered Methods to Inform the Design of Information Technologies for Team-Based Depression Care

Jina Suh[1], MS MA; Spencer Williams[1], BA; Jesse R. Fann[1,2], MD MPH; James Fogarty[1], PhD; Gary Hsieh[1], PhD; Amy M. Bauer[1], MD MS
[1]University of Washington, [2]Seattle Cancer Care Alliance, Seattle, WA

At the end of this presentation, attendees will be able to summarize the benefits of combining interviews and contextual inquiry to inform the design of health information technologies to support team-based depression care.

Description of the Problem or Gap

Complex clinical contexts that require coordination and collaboration of multiple providers with varying expertise, roles, and priorities present many challenges. Treating depression in patients with cancer with evidence-based psychotherapeutic modalities such as behavioral activation (BA) is a specific example of such a context that must also address the complexities of the disease and its progression, variable treatment modalities, and high mortality[1]. Although health information technology (HIT) has the potential to enhance care, this complex, team-based context motivates human-centered design (HCD) approaches that incorporate perspectives from multiple stakeholders.

Methods

The recently introduced Discover, Design/Build, and Test (DDBT) framework[2] leverages HCD approaches to improve the usability of evidence-based psychotherapies in community settings. Informed by the DDBT framework, the Discover phase of our research employed two HCD methods, semi-structured interview and contextual inquiry. A semi-structured interview is a flexible yet guided interview approach that involves asking open-ended questions on specific topics of study to facilitate discussion with the participants. Contextual inquiry[3] is a method for collecting data from stakeholders in the field where they are working. Similar to how medical professionals are trained by 'shadowing' their supervisors, contextual inquiries follow an apprenticeship model where the apprentice (i.e., the researcher) uses observation, inquiry, and interpretation to learn the craft of the master (i.e., the stakeholder). Interviewing is a quick method of gathering multiple perspectives from various stakeholders, but self-reports through interviews may omit details and not accurately reflect actual behaviors. Therefore, augmenting interviews with observation of actual behaviors and contexts is ideal.

We visited two urban and one rural cancer centers. We conducted one-hour, semi-structured interviews with 29 key stakeholders in team-based care (11 patients, 9 behavioral health providers [BHPs], 6 medical providers [oncologists, psychiatrists, primary care physicians], 3 administrators). To observe BHP workflows, tasks, and responsibilities, we conducted 38 hours of contextual inquiry observation with 8 BHPs and 26 patients. We used inductive thematic analysis to identify barriers and facilitators of depression care in cancer settings.

Results

Our interviews provided an extensive enumeration of challenges and sometimes conflicting views in coordination, communication, and implementation of team-based depression care (reported in detail in Suh et al.[4]). For example, although patients overwhelmingly expressed a need to communicate with BHPs through text messages, providers feared invasion of personal boundaries and desired transparent processes around handling emergencies (e.g., suicide ideation). Our observations augmented our interview findings in contextualizing these challenges. We describe two such examples here, with additional examples to be included in our presentation.

BHPs described a lack of time and access to resources and crisis management as barriers to depression care. In our observation, we saw that BHPs in one site traveled 5 minutes between buildings for sessions and had limited or no access to the EHR until they returned to their desks. BHPs often accommodated patient needs by meeting them in infusion suites or waiting rooms. We observed BHPs being pulled away from their current tasks by nursing staff to manage other patients' emotional crises and retroactively logging their patient encounters in the EHR. BHPs often carried a large binder of resource materials or left a session to print or copy resources for patients, further reducing their time with the patient. Shifting care contexts with frequent changes in location and a lack of dedicated exam rooms for BH care means any HIT solution needs to be flexible, dynamic, and mobile to fit care contexts.

BHPs also described a lack of using evidence-based depression treatments such as behavioral activation (BA) due to patient barriers (e.g., financial, housing, transportation) that interfere and compete with clinical care. While the BHPs stated that they planned to use BA in only 5 of 26 patient sessions observed, we observed that they often

incorporated active components of BA such as identifying goals or planning pleasurable activities in many other sessions. We also confirmed that burdens of cancer and unpredictable side effects from cancer treatments necessitated frequent adjustments to depression treatment plans, forcing BHPs to be flexible with their treatment. Future HIT solutions need to support the delivery of core components of evidence-based depression psychotherapies while also allowing flexible delivery to adapt to the needs of the patients and their complex care contexts.

Discussion and Conclusion

In identifying design opportunities for HITs for complex clinical contexts such as team-based care for depression in cancer settings, it is important to incorporate perspectives from each member of the care team (i.e., to understand their unique challenges and needs) and also from patients (i.e., whose perspectives are often left out in traditional approaches to designing HITs). In addition, observations through contextual inquiries provided first-hand, objective experience of BHP dynamic care contexts in which potential HIT solutions will be deployed. Contextual inquiries highlighted a gap in our shared understanding of BA: BHP perspectives on BA during the interviews were based on a structured, manualized form of BA while our observation revealed flexible delivery of core BA components leading to technology opportunities to support such use cases. Our research demonstrated that incorporating multiple human-centered design approaches to triangulate and contextualize findings is vital for designing HITs in complex clinical settings such as team-based depression care in cancer settings (see Table 1).

Attendee's Take-Away Tool

Table 1. Benefits of engaging multiple stakeholder types and incorporating contextual inquiry to discover challenges and design opportunities for HITs for enhancing team-based depression care in cancer settings

Benefits of Interviews with Multiple Stakeholders	**Benefits of Contextual Inquiries**
● Enumerate challenges and needs from each stakeholder (e.g., administrators focused on program-level challenges while BHPs focused on individual patient care challenges) ● Reveal tensions between multiple perspectives (e.g., BHPs preferred fewer navigational tasks while patients wanted continued navigational support) ● Triangulate common challenges from multiple perspectives (e.g., all stakeholders mentioned that patients lack tools for communication with providers and adherence to treatment plans) ● Allow participants to use their own words to describe the care processes, workflows, and roles	● Gather objective, ecologically valid data on BHP care context in their setting where HITs are deployed (e.g., location, available resources, facilities) ● Identify competing demands for provider attention and resources that were not stated in the interview (e.g., BHPs interrupted by front desk staff via Skype) ● Reduce the gap in shared understanding of core constructs that may be difficult to ascertain from interview data (e.g., differing definitions of BA) ● Overcome limitations of stakeholder self-report by confirming or augmenting stated views through observation of how care processes and workflows unfold from observer's external perspectives ● Uncover additional design requirements or technology enhancement opportunities emerging from observer's knowledge about HITs and direct exposure to care processes and workflows

Acknowledgements

Research was supported by the National Institute of Health P50MH115837. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

1. Fann JR, Ell K, Sharpe M. Integrating Psychosocial Care into Cancer Services. Journal of Clinical Oncology. 2012 Mar 12;30(11):1178-86.
2. Lyon AR, Munson SA, Renn BN, Atkins DC, Pullmann MD, Friedman E, Areán PA. Use of Human-Centered Design to Improve Implementation of Evidence-Based Psychotherapies in Low-Resource Communities: Protocol for Studies Applying a Framework to Assess Usability. JMIR Research Protocols. 2019;8(10):e14990.
3. Beyer H, Holtzblatt K. Contextual Design: Defining Customer-Centered Systems. Elsevier; 1997 Dec 8.
4. Suh J, Williams S, Fann JR, Fogarty J, Bauer AM, Hsieh G. Parallel Journeys of Patients with Cancer and Depression: Challenges and Opportunities for Technology-Enabled Collaborative Care. In Submission.