



The Use of Interactive Tangibles to Connect Clinicians and Patients with Chronic Pain

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Introduction

Chronic Pain (CP) is a prevalent type of pain that persists and/or recurs beyond three to six months [1] (Treede et al., 1003). In the United States alone, about 20% of adults have some form of CP [2] (Dahlhamer, 1003). Researchers have traditionally assumed there is a linear relationship between tissue damage and pain symptoms.

However, in the past 4-5 decades, a new theory accounting for social and psychological factors has emerged: the biopsychosocial model [3] (Engel). This framework points to a dynamic relationship between symptoms and complex environmental factors. Despite its popularity, systematic issues have barred integrative pain care principles from being widely operationalized [4]. The patient-clinician relationship (PCR) can be a promising aspect for implementing the biopsychosocial model of pain as well as creating impactful patient engagement and tackling disparities in healthcare. We hypothesize that patients can improve PCR by candidly reflecting on the clinical sessions. The research aims to identify the effectiveness of therapeutic tangibles, toys, and interactive interfaces in lowering the psychological barriers for effective communication between patients and healthcare providers.

Interviews

For this project, we will recruit patients with a chronic pain diagnosis from a clinician. The recruitment process will be through flyers at DHMC, Dartmouth College, and local clinics, in addition to online platforms. The patients will have therapeutic tangibles with an embedded sound recorder that enables them to verbally reflect on their visit. We will conduct interviews before and after the patients interact with the therapeutic tangibles to collect data for further qualitative and quantitative analysis.

3D Printing and Casting

The casting steps begin with creating a cast for therapeutic tangibles using a 3D modeling tool Fusion360. Then, we will pour Ecoflex, the platinum-catalyzed silicones, and create an interactive tangible. A sound recorder will be inside the therapeutic tangible to catch the patients' reflection on their medical visit experience.

Exhibition Design

After the qualitative and quantitative analysis on the interviews with the patients, we will hold an exhibition in the Engineering and Computer Science Center at Dartmouth College. The exhibition aims to increase awareness on CP and the patients' experience. The theme of the exhibition will be resonance - hoping to suggest and/or remind of images, memories and emotions of the fights the patients with CP put up. We will display the interactive tangibles with a recorded voice inside in addition to a private space where the visitors can listen to them.

(Results Title Example 4)

(Results Title Example 5)

(Results Title Example 6)

Conclusions & Future Directions

References & Acknowledgments