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Usability Test of a Family Health History Web Tool

Yan Huang, MA, Michael A. Collins, MS, Eric A. Ross, Ph.D., and J. Robert Beck, MD
Fox Chase Cancer Center, Philadelphia, PA

Abstract

We developed a web application prototype to collect cancer-related family health history data from clinical study participants and patients of Fox Chase Cancer Center. We conducted an initial round of usability testing by observing participants using the tool and recorded their experiences via a short survey. This process identified several issues with the current design using limited resources.

Introduction

Fox Chase Cancer Center (FCCC) has multiple organ-specific risk assessment programs (RAP) that collect cancer-related family health history for the purpose of cancer prevention and early detection. The current data collection process is to provide participants with paper forms that are completed at home and returned at a later date. Various data entry interfaces are then used to enter these data into a relational database.

Inspired by the U.S. Surgeon General's Family History Initiative, we developed a web tool for RAP participants or patients to enter their family history online at home. The tool provides user authentication, multi-screen page flow, session management, data validation, and pedigree drawing. We anticipate that deployment of the web tool should increase the efficiency of family history data collection and improve data quality. Since we expect that the users of the tool will have varied backgrounds and skills, we deemed it worthwhile to perform a formal usability test during iterations of our development cycle.

Methods

In December 2007 we recruited consenting participants through the FCCC Biosample and Tissue Repository program. Each participant accessed the web tool on a computer in a FCCC facility. A tester presented several scenarios and observed unobtrusively how the user accomplished tasks in each scenario. At the end of the session, participants completed a two-page survey. Each test session was limited to 20 minutes.

We designed the test scenarios to cover major use cases such as completing health history for relatives, stopping and resuming data entry, viewing and printing the pedigree, etc. The short survey included the widely used System Usability Scale (SUS) questionnaire. It also gathered feedback on the language and ease of use for each section. Questions on computer use at home were used as proxy for a participant's background and skills.

Results

Previous research demonstrated that the best usability test results come from testing no more than 5 users.¹ In our case, we observed the same findings repeatedly from testing just 4 participants. The small-scale usability test is an effective way to identify issues that might often be overlooked by developers and researchers.

Entering family health history online is a challenging task in terms of time and effort. The most frequent suggestion from our participants was to have an introductory page describing the data required to finish a family health history so that they can collect necessary information before starting data entry. Easily accessible instructions should be available to explain medical terms and provide “how-to” help on every page. Directions should be provided on how to enter unknown but required fields such as date of birth. Participants also suggested new features which were dismissed in the original design (e.g., sharing family history data among relatives). Even though the overall SUS score of our prototype was low (54 out of 100), the majority of the participants stated that they would feel comfortable entering family health history online at home. We will repeat the test after existing issues have been addressed.

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