Abstract

This dissertation contains four essays that address the design and evaluation of health information technology for improving clinician and consumer decision making related to chronic disease risk. A basic question that summarizes the problems in these essays is: How should information technology-enabled interventions be designed and evaluated in order to effectively deliver expert information about health risks to non-expert users? Chapter 1, *An Information Visualization Approach to Classification and Assessment of Diabetes Risk in Primary Care*, describes the development and evaluation of a novel approach to organizing, classifying and displaying patient data according to risk of diabetes and heart disease. Chapter 2, *The Impact of Web-Based Risk Calculators on Health Risk Perceptions and Information Processing* evaluated the response of middle-aged adults to personalized risk calculator websites, like those commonly available on the Internet, versus non-personalized diabetes risk information. Results showed that the non-personalized website led users to seek significantly more health information, to be more engaged, and to process information more systematically. Chapter 3, *Evaluating Consumer E-Health Services for Risk Communication: An Organizational Field Experiment*, built on the second essay to test the effectiveness of online risk calculators using a larger participant sample and a realistic health promotion setting. Most striking was that participants who underestimated their pre-diabetes risk showed little propensity to adopt more accurate risk beliefs, but participants who overestimated their risk significantly reduced their risk perceptions after using a personalized risk calculator. This suggested an avoidance of negative risk information and may mean that the primary effect of risk calculators is to risk perceptions, a troubling result since these diseases are already known to raise relatively little concern among the public. Chapter 4, *Designing Individualized Risk Communication that Avoids Information Avoidance* looks at prior psychology, decision making and health behavior research to explain the empirical results.
presented in earlier chapters and point to future work that may improve the design and evaluation of technology-mediated risk communication services.