Abstract

NURSING SCIENCE

Systems-Based Patient Work Analyses of Older Adults with Heart Failure

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Dissertation under the direction of Professor Betsy Weiner

This doctoral research examined the medication management work of older heart failure patients, with a focus on cognitive work amenable to tool and technology interventions. Older adults with chronic disease struggle to manage complex medication regimens as evidenced by high rates of errors and non-adherence leading to increased rates of disability, death, and reduced quality of life. Health information technology has the potential to improve medication management, but only if it is based on a thorough understanding of medication management work as it occurs in natural settings. Few studies address the design of patient-facing tools, patient work in context, or test methods to acquire this knowledge. The first phase of this study applied human factors/system engineering theories to guide the analyses of four work system elements: performance shaping factors, cognitive workflow, cognitive artifacts, and adaptive strategies. Data from 61 older heart failure patients and 31 accompanying caregivers revealed medication management as a fragile system of interacting people, artifacts, time, and space. Cognitive, collaborative, and individual processes were influenced by multiple performance shaping factors that directed the system towards and away from optimal performance, risk and harm. Strategies supported medication management performance, but patients had difficulty adapting to unexpected situations and events. Patients had few tools to support medication management, and these tools were not designed with an understanding of patient health work. In the second phase of the study, fifteen older adults with heart failure and two caregivers participated in a pilot test of a digital diary method by recording medication management activities for one week using a tablet device. The evaluation revealed the digital diary method as an effective, efficient and satisfactory data collection method to capture rich work systems of older adults with heart failure. In conclusion, patients strived to control their system and achieve goals. In this way patient work is similar to professional work and likely could benefit from tools and research methods adapted from professional work settings. Patient medication management was highly distributed and collaborative, indicating the need for technology that facilitates communication, coordination, information sharing and integration across locations, time, and people. If designed for usability and acceptance, technologies can improve medication management for older adults living with heart failure.

Approved _____ Date_____

Betsy Weiner, Ph.D.