

Chapter 16

Evaluating User–Centered Design of E–Health for Older Adults: Using Subjective Methods

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ABSTRACT

Health care related technology, or E-health, has the potential to lessen the impact of the growing aging population on the health care system and support older adults' preference for aging in place. However, for technologies to be adopted by older users, research is needed to understand older adults' unique health care needs, their preferences for support, and their perceptions of technologies designed for health care. Specifically directed toward older users, this article highlights the need for user-centered design and the implications for technology acceptance, and describes studies that employed systematic subjective methods such as focus groups, interviews, and questionnaires to provide a rich, detailed depiction of older users' interactions with E-health. User-centered design evaluations involving older adults can help designers create products and services that are more likely to be adopted by older adult end users.

INTRODUCTION

The older adult population continues to grow rapidly worldwide. More than 20% of United States residents are projected to be 65 or older in 2030 (Ortman, Velkoff, & Hogan, 2014), and almost 25% of Europeans are projected to be a senior citizen by 2030 (Ferruci, Gialauria, & Guralnik, 2008). Society does not seem prepared sufficiently for the impact this growth may have on the health care system (Ferruci, et al., 2008). The decline in mortality rates over the past century has had consequences for the proportion of

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people living to old age, putting more strain on the health care workforce which already struggles with under-staffing and lack of resources. Because the economic demand of treating and managing older adults' health conditions with traditional means is too high, alternative methods are required to meet the health care needs of older adults adequately. E-health is a rising discipline that may offer solutions to reduce older adults' dependence on health care professionals and support their wish for independent living.

Surveys have consistently found that aging in place is preferred by most older adults (AARP, 2010; Erikson, 2012; Guo & Castillo, 2012). In a recent survey, 73% of older adult respondents reported a desire to stay in their current residence as long as possible (AARP, 2010). Older adults appear to see the potential of technology in support their health needs as well as their preference for remaining independent and living in their own home. Three-fourths of the respondents in an AARP survey reported being willing to use telemedicine as a means for health care professionals to diagnose or monitor health conditions remotely (2008). Technology developers appear to also see the potential of technology to support older adults preferences to age in place as demonstrated by a growing wave of start-ups and expansion of established industries, catering to older adults and their health care needs (AARP, 2011). By allowing some of older adults' health care needs to be addressed in the home, E-health also has the potential to reduce the financial burden of treating and managing age-related health conditions both on an individual level and on a societal level. However, for E-health technologies to meet their potential, they must be adopted and used by older adults.

The objectives of this article are threefold. For one, we identify the need for user centered design directed toward older adults by discussing the current and future trends of population aging and the ability of technology to support home health care and aging in place. Secondly, we will discuss how models of technology acceptance provide direction about the general factors that are associated with technology adoption. Thirdly, we will describe studies that used systematic subjective methods such as focus groups, interviews, and questionnaires and discuss the ability of these methods to provide a rich, detailed depiction of older users' E-health needs, preferences, and attitudes. By employing methods such as these, researchers and technology developers will gain insights into the characteristics and specifications for E-health technologies that will facilitate adoption for older users. For the purposes of this article we will refer to individuals 60 years of age and older as older adults.

Aging Society

Our society is aging rapidly. Factors including lowered mortality rates, lowered fertility rates, improvements in health and medical care, as well as changes in attitudes toward birth control and marriage, are causing a marked shift in the age distribution toward older groups in industrialized countries (Cheng & Heller, 2009). The percentage of 65-year-olds in North America is expected to rise from 13% in 2010 to 20% in 2030 (Spitzer & Davidson, 2013). The number of very old adults (age 85 and over) is expected to grow from 5.5 million in 2010 to 19 million by 2050 (Vincent & Velkoff, 2010). Worldwide, the size of 65-year-olds should triple from 8% in 2010 to 24% in 2050 with the largest increases in less developed countries (National Institute on Aging, 2015). This increase is unprecedented (National Institute on Aging, 2007) and has profound implications for health care (Cheng & Heller, 2009). Recent numbers from the U.S. Centers for Disease Control (2011) show that 80% of older adults having at least one chronic condition and within this group half of them suffering from two or more chronic conditions. A reasonable assumption is that with this rapid growth of older, and particularly very old adults, who

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