

A Comparison of Two Models of Web-based Education in Older Adults

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Abstract: The aim of this study was to compare the efficacy of a web-based computer-assisted education (CO-ED) system versus searching the Internet for learning about hypertension. Twenty-two older adults (age 45+) in Baltimore, MD were enrolled. Analysis of pre- and post- knowledge scores indicates a significant (15%) improvement among CO-ED users as opposed to Internet users.

Background: Patient education is an important component of successful hypertension management. Although various educational methods have been developed, interactivity is a feature not fully employed for patient education. The Internet provides a wealth of information; however, to the computer novice, the quantity and quality can be overwhelming and inconsistent. We have developed a web-based computer-assisted education (CO-ED) system that provides interactive, self-paced computer education for hypertension. The system has been successfully utilized for education about other chronic diseases, but has never been tested with hypertension education or compared to learning via an Internet search.¹

System Development: The CO-ED system was developed to be a user-friendly, interactive learning tool. Briefly, the CO-ED curriculum is divided into consecutive sections. Each section is broken down into a sequence of simple educational messages. After each educational message, the patient receives a multiple-choice question aimed at assessing patient understanding of the educational message. If the patient answers correctly, the next message is presented. If the patient answers incorrectly, the current message is presented again. At the end of each section, the patient receives a short quiz before moving onto a new section.

The system uses only five keys on the keyboard, which is helpful to patients who have never used a keyboard and would have difficulty manipulating a mouse. It employs audio-visual components to increase interest, reinforce educational messages, and, create positive reinforcement. The educational messages were developed based on theories of adult learning and could be adapted to different education levels, cognition, or individual disabilities.

Methods: Research participants were randomly assigned to an intervention or control group. Intervention participants spent 30-40 minutes using the CO-ED system, which provides general information about hypertension. Control participants spent 30-40 minutes searching the Internet at www.yahoo.com for information about hypertension. Both groups received a brief lesson on how the CO-ED program or the Internet works. Pre- and post-assessments of hypertension knowledge scores (KS) were conducted. Additionally, demographic, attitudinal, and cognitive functioning data were gathered using both quantitative and qualitative methods. In total, 22 participants were recruited from two medical centers in Baltimore, MD.

Results: Average age for the control group was 67.7 and for the intervention group was 65.1. Average number of years of education for both groups was approximately 13 years. Approximately 55% of participants had never used the Internet. Self-reported racial/ ethnic group identification included 64% African American participants, 27% white participants, and 9% "other". Control patients had hypertension for, on average, 23.2 years, while intervention patients had hypertension for 13.5 years on average. Analysis indicates a statistically significant 15% increase in KS for the intervention group ($p < 0.005$) while KS for the control group increased only 0.8%.

Discussion: There was a dramatic improvement in KS for participants using the CO-ED system while there was no improvement in KS for participants searching the Internet. For older adults, particularly with no Internet experience, the CO-ED system is an effective tool for learning about hypertension. As the CO-ED program can easily be accessed in convenient locations, it would be a cost effective and clinically effective method for improving hypertension knowledge.

References

1. Finkelstein J., Nambu S., Ansell J. Computer-assisted education for patients on anticoagulation therapy. *Int J Behav Med* 2002; 9(1suppl): 87-89.