A Randomized Controlled Trial of Interactive Education in Older Adults with Diabetes: Preliminary Results

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Abstract

Computer-assisted education can be an effective means for patient engagement and empowerment, however comparison of computer-assisted education with a printed brochure has not been studied systematically in older adults with diabetes. The purpose of this study was to compare tailored computer-assisted education (CO-ED) to a brochure in a randomized controlled trial. Older adults taking oral diabetes medications were randomly assigned to receive the same diabetes medications curriculum via CO-ED (N=35) or printed brochure (N=38). After using the interactive education, knowledge scores improved from 26.6 ± 5.3 to 33.2 ± 4.2 (p<.0001) whereas in the control group which used a brochure knowledge scores changed from 26.7 ± 4.5 to 28.7 ± 4.8. Attitudinal survey and qualitative interview results demonstrated a high level of acceptance of interactive education. We concluded that interactive technology can be successfully implemented in older adults with diabetes.

Introduction

Chronic diseases disproportionately affect older adults. Ongoing health education is has been shown to promote effective self-management and engagement in activities that maintain functioning and reduce health decline. Effective health education results in patient activation and improved health outcomes. Interactive health communication technologies have been shown effective in promoting health education, however, its potential in older adults has not been uncovered systematically.

Methods:

Interactive diabetes medications education was delivered via tailored avatar-based platform described previously [1]. Eligible participants included older adults who were 65 years of age and older, currently taking or have taken an oral diabetes medication in the past, and had a Mini Mental State Examination score of at least 23. Baseline socio-demographic, mental status, health literacy, computer literacy, medication adherence, diabetes symptom checklist, quality of life, patient activation and diabetes numeracy and knowledge profiles were obtained. Participants were asked to use the educational program for 24 hours at their own pace. The impact of the educational program was assessed using a diabetes knowledge survey administered prior to and following the educational program. An attitudinal survey and semi-structured qualitative interview were also conducted following the educational program to obtain acceptance of the educational device as well as the user’s needs, preferences and values about diabetes education and the use of technology in seniors in an open-ended format.

Results:

Overall, 72 older adults with a clinical diagnosis of diabetes were randomized to intervention and control groups; 59% were females and the average age was 75; 39% of patients have never used a computer and 18% reported never using a mobile device. 81% responded that the tablet education was not difficult to use, and 81% would use the interactive education in the future; 89% of participants would advise other older adults to use avatar-based education, and 81% reported their learning experience was either good or excellent. In the control group, 59% reported the sentences used in the educational materials were difficult and 59% reported getting no feedback on their learning process as compared to only 11% in the intervention group. The total score for the attitudinal survey was 65.7 as compared to 59.4 in the control group (p<.0001). After using the interactive education, knowledge scores improved from 26.6 ± 5.3 to 33.2 ± 4.2 (p<.0001) whereas in the control group which used a brochure knowledge scores changed from 26.7 ± 4.5 to 28.7 ± 4.8 as described in figure 1. The intervention group demonstrated a significantly higher change in knowledge score 6.6 ± 5.0 as compared to the control group 2.0 ± 2.4 (p<.0001).
Analysis of qualitative interviews showed that the education system was easy to use, patients liked that the content delivered in an interactive way and expressed interest in using it at home in the future shown in figure 2. Suggestions from patients included making the content more available to the public, adding information about new medications on the market, and information about diabetic recipes, diet and exercise.

**Conclusion**

Interactive avatar-based diabetes education can be potentially a useful resource to inform older adults about diabetes medications and diabetes self-care. Future work will determine the extent to which this type of education modality can supplement other education modalities.

**References**