DIGITAL VOICE ASSISTANTS FOR DELIVERING EXERCISE, NUTRITION AND MEDICATION INFORMATION TO POSTMENOPAUSAL WOMEN WITH OSTEOPOROSIS: A 24-WEEK PILOT RANDOMISED CONTROLLED TRIAL

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Abstract

Objective: To determine the feasibility and preliminary effectiveness of a 24-week digital voice assistant-delivered intervention for improving osteoporosis-related health behaviours, knowledge, and attitudes in postmenopausal women with osteoporosis.

Material and Methods: Fifty postmenopausal women currently prescribed anti-osteoporosis medications were randomised to 24 weeks of automated osteoporosis education (video/audio/text) on medication, nutrition, and exercise (including 3 sessions/week home-based strength, balance and impact exercise) broadcast via a supplied Amazon Alexa Echo Show device located in their home (Alexa), or monthly educational emails (control). Outcomes included changes in accelerometer-determined moderate-to-vigorous physical activity (MVPA) and sedentary behaviour, dietary calcium intakes (via food records), and scores for the Modified Falls Efficacy Scale, Osteoporosis Knowledge Assessment Tool, and Adherence Evaluation of Osteoporosis Treatment Questionnaire.

Results: Forty-seven (94%) women (mean±SD age 64.3±6.1 years) completed follow-up (23 Alexa group; 24 control group). Alexa group participants engaged with 68±25 of 72 (mean=94%) prescribed education and exercise sessions with no adverse events. Over 24 weeks, MVPA time significantly increased (+17.9±28.8 mins/day P=0.008) and sedentary time significantly decreased (-40.2±71.7 mins/day; P=0.016) for Alexa only, but these changes did not differ to controls (both P>0.05). Similarly, calcium intakes increased in Alexa and decreased in controls (+84±372 vs -91±393 mg/day) but the difference was not significant (P=0.127). Falls efficacy (P=0.032) and osteoporosis knowledge (P=0.038) scores significantly increased for Alexa compared with controls. Changes in attitudes to osteoporosis medication adherence scores did not differ between groups (P=0.114) but improved within the Alexa group (baseline 18.7±3.3 vs follow-up 19.9±2.0; P=0.041).

Conclusions: This pilot 24-week digital voice assistant-delivered multifaceted exercise and education intervention demonstrated excellent adherence and safety in postmenopausal women with osteoporosis, but larger trials are needed to confirm its effectiveness for improving osteoporosis-related health behaviours, knowledge and attitudes, and clinical outcomes such as bone mineral density.