Patient activation and health-related quality-of-life in association with smartwatch alerts for atrial fibrillation detection


1University of Massachusetts Chan Medical School, Worcester, United States of America; 2Northeastern University, Boston, United States of America

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Background: Smartwatches with various alert systems are becoming increasingly popular in the detection of atrial fibrillation (AF) post stroke, however their impact on psychological well-being remains unknown.

Purpose: Assess the association between smartwatch alerts for detected atrial fibrillation in older stroke survivors and patient activation as well as health-related quality-of-life.

Methods: Data were used from the Pulsewatch study, a multiphase, randomized controlled trial, which enrolled older adults (≥50 years of age) from the UMass Memorial Health System with history of a stroke and no contraindications to anticoagulation, who were given a smartwatch for AF detection. In Phase I, participants were randomized 3:1 (intervention:control) to receive a smartwatch/smartphone pair and an FDA-approved cardiac patch monitor or only the patch (control) to monitor for AF for 14 days. In Phase II, participants were re-randomized 1:1, with the intervention group being offered the smartwatch/smartphone pair for an extra 30 days. Participants were grouped into those receiving at least one alert of a possible abnormal rhythm versus those who did not receive any alerts from their smartwatch. At baseline, 14 days, and 44 days the Consumer Health Activation Index was used to assess patient activation and the Physical and Mental Component Summary of Short-Form Health Survey were utilized to evaluate physical and mental health-related quality-of-life, respectively. Mixed-effects repeated measures linear regression models were used to examine changes in patient activation and physical and mental health-related quality-of-life, in relation to alerts, adjusting for confounding variables including age, sex, race, history of arrhythmias, history of congestive heart failure, history of coronary artery disease, baseline depression, and baseline cognitive impairment, over the study period.

Results: 94 participants (64.6±9.1 years of age, 87.2% non-Hispanic white, and 43.6% female) were included in the analysis; 16 of whom received at least one alert. Specifically, twelve participants received 1 to 3 alerts, three participants received 11 to 18, and one participant received 226. In fully adjusted models, receiving alerts was not associated with changes in patient activation or mental health-related quality-of-life (β =−1.70, p-value 0.60 and β =2.85, p-value 0.09 respectively), but was associated with a significant reduction in physical health-related quality-of-life (β =−4.67, p-value 0.04).

Conclusions: In a cohort of older stroke survivors who wore smartwatches for up to 44 days, reception of alerts was not significantly associated with changes in patient activation or mental health-related quality-of-life but was significantly related to a decline in physical health-related quality-of-life. Further studies are necessary to explore the use of smartwatches in AF screening and their impact on psychological health and quality-of-life.