

## **Instant analysis of the ECG with a new digital technique during palpitations reduce symptoms, anxiety, depression, and increase HRQOL in women (Red Heart Study).**

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**Background.** Palpitation are common, particularly in women, and usually benign caused by premature atrial/ventricular beats or stress-induced sinus tachycardia. Palpitations may cause disturbing symptoms, anxiety, depression, and decreased health related quality of life (HRQOL). Uncommonly, arrhythmias of clinical importance such as atrial fibrillation or paroxysmal supraventricular or ventricular tachycardia may be the cause

**Aim:** To evaluate if instant analysis of underlying heart rhythm during palpitations reduce symptoms, anxiety, depression, and increase HRQOL.

**Method:** In all, 918 women (age  $56 \pm 11$  years) with palpitations causing anxiety were recruited from social web sites. Coala Heart Monitor® was used by participants and ECG recorded twice a day and at symptoms for 60 days. The system uses a well-validated algorithm to analyze heart rhythm, is connected to the user's smartphone and provides immediate response to the user. In cases of non-benign arrhythmias, the result was also analyzed manually. Questionnaires addressing symptom (Symptom severity and frequency checklist, SCL), anxiety, depression (Hospital anxiety and depression scale, HADS, Generalized Anxiety Disorder, GAD-7) and HRQOL (RAND-36) were analyzed before and after two months. Exclusion criterium was known atrial fibrillation.

**Results:** Between June 2018 - November 2018, 280 474 recordings (both chest and thumbs) ECG recordings were automatically analyzed. Frequency and severity of symptoms decreased (frequency  $23.7 \pm 8$  to  $19.8 \pm 9$  ( $p < 0.001$ ), severity  $22.6 \pm 5$  to  $21 \pm 4$  ( $p < 0.001$ )). Anxiety and depression (HADS and GAD-7) decreased ( $p < 0.001$ ) and HRQOL increased in all domains ( $p < 0.001$ ). In 83% of recordings during symptomatic palpitation, benign premature atrial or ventricular beats, sinus tachycardia, or normal sinus rhythm were found.

**Conclusion** Instant analysis of the ECG with direct response during palpitations reduce symptoms, anxiety, depression, and increase HRQOL in women.