

Evaluation of a Biofeedback-assisted Meditation Program as a Stress Management Tool for Hospital Nurses: A Pilot Study

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PURPOSE OF STUDY: to evaluate feasibility and efficacy of a novel meditation program (Healing Rhythms™) on stress, anxiety and quality of life in hospital nurses.

METHODS: 1) *Population:* 11 RNs not previously engaged in meditative practices, working in an academic medical center. 2) *Intervention:* A self-directed computer guided meditation program (Healing Rhythms™) consisting of 15 steps (computer sessions) using biofeedback (heart rate variability) to reinforce training. Participants were instructed to practice the intervention at home 4 times a week for 30 minutes for 4 weeks. 3) *Outcome measures:* a) SF 36 Vitality Subscale, a 9 item tool using visual analog scales (1-6), b) State Trait Anxiety Scale (STAI), a 20 item tool (1-4) c) Linear Analogue Self Assessment (LASA) stress scale (0-10) d) LASA anxiety scale (0-10) e) Heart rate variability algorithm scores measured via a data formatter program including scores for heart rate amplitude, periodicity (as an index of respiratory sinus arrhythmia) and coherence (as an index of sympathovagal balance). f) A satisfaction questionnaire (LASA 0-10). 4) *Statistical analysis:* Score differences at baseline and study-end using paired t-test.

RESULTS: 8 of 11 enrolled nurses completed the study. Intent to treat analysis showed significant improvement in stress management as measured by SF 36 Vitality Subscale ($p=0.0377$), STAI ($p=0.0250$), LASA Stress ($p=0.0116$), LASA anxiety ($p=0.0128$). There were no significant changes in heart rate variability, periodicity and coherence scores throughout the course of the trial. Scores were extremely variable during the first six sessions. During the final nine sessions, scores were consistent with minimal change between individual sessions. Nurses were highly satisfied with the meditation program rating it 8.6 (of 10).

CONCLUSION: the results of this pilot study suggest feasibility and efficacy of a biofeedback-assisted, self-directed meditation training program to help hospital-based nurses reduce their stress and anxiety. Heart rate variability algorithm scores were inconsistent and further studies are needed to document whether these scores are valid outcome measures. Optimal frequency of use of the program as well as the duration of effects over time will need to be addressed in future studies.