VALIDITY AND RELIABILITY OF SHORT-TERM HEART-RATE VARIABILITY FROM DISPOSABLE ELECTROCARDIOGRAPHY LEADS


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Background The evaluation of heart rate variability (HRV) has become increasingly common, as a simple, non-invasive measure that is sensitive to physiological changes and can help to structure exercise training programmes, adaptation, and recovery. Novel single-use electrocardiography (ECG) leads have been developed to monitor HRV in clinical and rehabilitation settings.

Aim This study assessed the validity and reliability of short-term HRV measures obtained from disposable ECG leads.

Methods Thirty healthy subjects (mean age 33±10 years; 9 females) underwent five-minute resting HRV assessments using disposable (single use) ECG (Kendall DLTM) leads. Time domain data from were analysed using Intraclass correlation coefficient (ICC) and Bland-Altman (B-A) analyses with p values <0.05 regarded as significant.

Results The ICC with 95% confidence interval (CI) between disposable and reusable leads was excellent for time domain (R-R interval (ms); 0.99 (91.1,0.00), root mean square of successive normal R-R interval differences (RMSSD) (ms); 0.91 (0.76,0.96), SD of normal-to-normal R-R intervals (SDNN) (ms); 0.91 (0.68,0.97) and frequency domain (Low Frequency (LF) normalised units (nu); 0.90 (0.79,0.95), High Frequency (HF) nu; 0.91 (0.80,0.96), LF power (ms²); 0.89 (0.62,0.96), HF power (ms²); 0.90 (0.72,0.96) variables. The mean difference and upper and lower limits of agreement between disposable and reusable leads for time (<2.5±1.4%) and frequency (<5±1%) domain measures were acceptable. Repeated measures using disposable leads demonstrated excellent reproducibility (ICC 95% CI) for R-R interval (ms); 0.93 (0.85,0.97), RMSSD (ms); 0.93 (0.85,0.97), SDNN (ms); 0.88 (0.75,0.95), LF power (ms²); 0.87 (0.72,0.94), and HF power (ms²); 0.88 (0.73,0.94) with coefficient of variation ranging from 2.2%-5%.

Conclusion Single-use Kendall DLTM ECG leads demonstrate a valid and reproducible tool for assessment of HRV. Disposable leads may also play an important role in infection control in clinical and rehabilitation settings.

A NARRATIVE REVIEW OF KEY STUDIES ON THE HEART MANUAL – LOOKING BACK ON 30 YEARS OF EVIDENCE ON HOME-BASED CARDIAC REHABILITATION

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Background The Heart Manual (HM) Programme is the UK’s leading home-based self-managed cardiac rehabilitation programme (HBCRP) for individuals recovering from acute myocardial infarction and/or revascularisation. This year marks 30 years of HM implementation in the NHS and overseas.

Aim The aim of this study is to conduct a narrative review of the HM over the last 30 years, considering its outcomes as a HBCRP.

Methods Databases AHMED, Embase, APA PsychInfo, Ovid Medline were used to source studies where the HM outcomes were a key focus. Grey literature was searched by the HM department. Narrative synthesis was used to capture the qualitative element of extracted papers dated after the Heart Manual 2011 Systematic Review.

Results The search revealed 48 papers; 7 studies were already included in the 2011 systematic review (SR), with 4 new papers remaining and 1 grey-paper, others were duplicates.

Of the studies and those included in SR, 9 reported on efficacy, 4 on programme adherence, and 2 on qualitative outcomes (1 digital-HM, 1 HM patient reported outcomes). Outcomes on efficacy and adherence were all positive. Qualitative findings (n=2) cited positive attitudes towards the HM from patient representatives, general user-friendliness and useful content. An audit on HM patient feedback reported high engagement with health behaviour change(s), positive gains from psychosocial support, and improved understanding and awareness of condition. A grey-paper on patient reported outcomes during COVID-19 reported improvements in managing other health conditions, including diabetes, blood pressure, and mental health, through using the HM. Patients also reported feeling reassured by the HM.

Conclusion The HM continues to be the most widely studied HBCRP, and has played a key role in demonstrating the effectiveness of HBCRP over the last 30 years. Recent surveys have shown reported benefits in managing other health conditions, accessibility, and providing psychological support.

IMPLEMENTING A HOME-BASED CARDIAC REHABILITATION PROGRAMME FOR PEOPLE WITH HEART FAILURE AND THEIR CAREGIVERS: FINDINGS FROM THE SCOT: REACH-HF STUDY

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Background Despite robust evidence and national guidance recommending cardiac rehabilitation (CR) for heart failure (HF), access remains poor, a situation magnified by COVID-19. The Rehabilitation EnAblement in CHronic Heart Failure (REACH-HF) randomised controlled trial demonstrated the clinical and cost-effectiveness of a novel home-based CR self-management programme. The SCOT:REACH-HF study was