Smartphone-based remote monitoring in chronic heart failure: patient & clinician user experience, impact on patient engagement and quality of life

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Background: Heart failure with reduced ejection fraction (HFrEF) lowers patients' quality of life (QoL) [1]. Digital interventions such as ESC's "Heart Failure Matters" website aim to encourage patient-engagement & self-management [2], which remain major challenges in HFrEF care. Although remote monitoring (RM) has been tested in HFrEF with inconclusive impact on prognosis [3], its impact on patients' experience and engagement is unclear [4]. Furthermore, the perspective of clinicians using RM technologies remains unknown. We present users' experience of Luscii, a novel smartphone-based RM platform enabling HFrEF patients to submit clinical measurements, symptoms, complete educational modules, & communicate with HF specialist nurses (HFSNs).

Purpose: (I) To evaluate the usage-type & user experience of patients and HFSNs.

(II) To assess the impact of using the RM platform on self-reported QoL

Methods: A two-part retrospective analysis of HFrEF patients from our regional service using the RM platform: Part A: Thematic analysis of patient feedback provided via the platform and a focus group of six HFSNs. Part B: Scores for a locally-devised HF questionnaire (HFQ), depression (PHQ-9) & anxiety (GAD-7) questionnaires were extracted from the RM platform at two timepoints: at on-boarding and 3 months after. Paired non-parametric tests were used to evaluate difference between median scores across the two time points.

Results: 83 patients (mean age 62 years; 27% female) used the RM platform between April and November 2021. 2 dropped out & 2 died before 3 months. Part A: Patients and HFSNs exchanged information on many topics via the platform, including patient educational modules (Figure 1). Thematic analysis revealed positive and negative impacts with many overlapping subthemes between the two user groups (Figure 2). Part B: At 3 months there was no difference in HFQ score (19 vs. 18, p=0.57, maximum possible score = 50). PHQ-9 (3 vs. 3, p=0.48, maximum possible score = 27) and GAD-7 (5 vs. 3, p=0.54. maximum possible score = 21) scores were low at onboarding and follow-up.

Conclusions: This evaluation shows smartphone-based RM is feasible in HFrEF with good retention (2% drop-out rate over 3 months, albeit in a cohort with low baseline depression and anxiety levels). The platform serves as an integrated solution for symptom reporting, patient-clinician communication & education. Positive impacts include patient engagement, convenience, admission avoidance & medication optimisation, but there was no corresponding change in QoL scores in the short-term. We find potential pitfalls: information overload for patients & increased workload for clinicians.

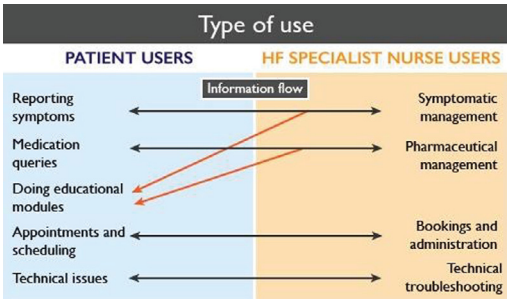

Figure 1. Information flow between users

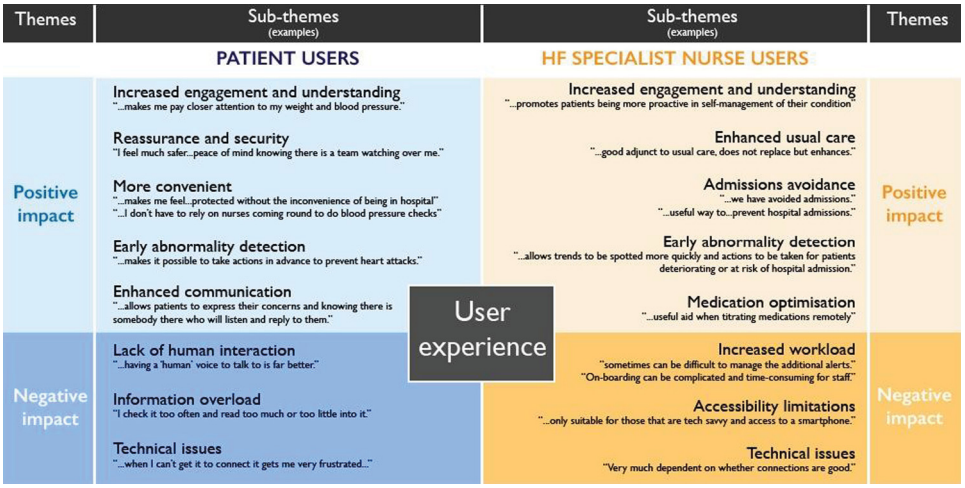

Figure 2. User experience thematic analysis