Correlation Between Medication Regimen Complexity and Quality of Life in Patients with Heart Failure

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Background

- Patients with heart failure (HF) take an average of 11.8 different medications daily.1
- Evidence-based therapies are prescribed to reduce mortality, minimize hospitalizations, improve ejection fraction and optimize quality of life (QoL).2
- Complex medication regimens result in drug interactions, inappropriate medication dosing, therapeutic drug-failure, patient non-adherence, functional decline and reduced QoL.3,4,5
- Given the strong inverse correlation between QoL and mortality, approaches to optimize QoL should be considered.6
- The Minnesota Living with Heart Failure Questionnaire (MLwHFQ) is a self-completion, 21 item questionnaire on perception of physical, emotional, and socioeconomic limitations used to quantitate QoL in HF patients.7
- The Medication Regimen Complexity Index (MRCI) is a validated 65 item tool that scores medication regimen complexity based on number of medications, dosage forms, dosing frequency and administration instructions for all over the counter and prescription medications.8

Methods

- **HF Clinic Records Screened for Eligibility:**
  1. Age 18-80 years, and 2. MLwHFQ score documented in clinic note

- **Data Collection:**
  1. Study code assigned
  2. Demographic data documented in excel
  3. MLwHFQ score at baseline (and follow-up, if available) documented in excel
  4. Medication regimen documented during same MLwHFQ visit used to calculate: a. Categorical MRCI (disease, Rx, OTC) b. Sectional MRCI (A, B, C) c. Total MRCI

- **Statistical Analysis:**
  1. Correlation: baseline MLwHFQ and MRCI
  2. Correlation: change in MLwHFQ and MRCI

- **Results**

  | Table 1. Baseline Demographics | |  
  | Age in years - Median (IQR) | 56 (50-64) |
  | Sex – no. (%) | |  
  | Female | 18 (36) |
  | Male | 32 (64) |
  | Race – no. (%) | |  
  | Asian | 1 (2) |
  | Black or African American | 7 (14) |
  | White | 42 (84) |
  | Ethnicity – no. (%) | |  
  | Hispanic or Latino | 20 (40) |
  | Nor Hispanic or Latino | 30 (60) |
  | Documented heart failure – no. (%) | |  
  | HFpEF | 35 (70) |
  | HFrEF | 10 (20) |
  | Unspecified | 5 (10) |

- **Table 2. Baseline and Follow-Up MLwHFQ Scores**

  | Baseline (n=50) | Follow-Up (n=18) | p-value |
  | MLwHFQ score | 63 (51.25 – 79.25) | 64.2 (54.25 – 84.25) | 0.02 |
  | MRCI score | 20 (15.375 – 30.25) | 2.75 (1.18-3.75) | 0.11 |
  | Total # meds | 9.5 (7-13) | 16.5 (8.5-18.75) | 0.04 |
  | # HF meds | 3 (2-3) | 3 (2-2.5) | 1.00 |

- **Figure 1. Correlation between Baseline MRCI & MLwHFQ**

- **Figure 2. Correlation between Follow-Up MRCI & MLwHFQ**

- **Discussion**

  - There is no evidence of a strong correlation between baseline MLwHFQ & MRCI scores
  - Average time to follow-up from baseline was 553.83 days
  - Analysis of follow-up MLwHFQ scores demonstrated a median reduction of 14.5 points, indicating an improvement in QoL, despite an increase in MRCI by a median of 2.7 points.
    - Of the 8 patients with follow-up MLwHFQ scores available, only 1 patient had a reduction in the complexity of the medication regimen.
    - The increase in MRCI was driven by an increase in quantity and complexity of non-HF related therapies
  - Compared to similar studies evaluating MLwHFQ, the patient population in this study had a higher baseline MLwHFQ score, indicating a lower reported QoL.
  - Data evaluating MRCI in patients with HF is lacking, making this study a valuable addition to the literature
  - The lack of existing data makes assessment of external validity difficult

- **Limitations**

  - MRCI calculations were based on subjective report of medication regimens absent pharmacist based reconciliation
  - Follow-up MLwHFQ administration was inconsistent in rate of completion and time between follow up
  - Patients with HFrEF are underrepresented in this study

- **Conclusion**

  - A focused reduction in HF related MRCI does not improve QoL and absent a global reduction in MRCI, associations with QoL could not be determined
  - PharmD presence in the clinic may now offer potential for targeted reduction in MRCI, which could then be studied to evaluate effect on patient QoL

References


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