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 can result in drug interactions, inappropriate medication dosing, therapeutic 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]

Objective

To determine if a correlation exists between MRCI and QoL

Methods

UTH SA IRB Approval

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

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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

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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. (%)	
HFrEF	35 (70)
HFpEF	10 (20)
Unspecified	5 (10)

IQR: interquartile range (25-75%)
HFrEF: heart failure with reduced ejection fraction
HFpEF: heart failure with preserved ejection fraction

Figure 1. Correlation between Baseline MRCI & MLwHFQ

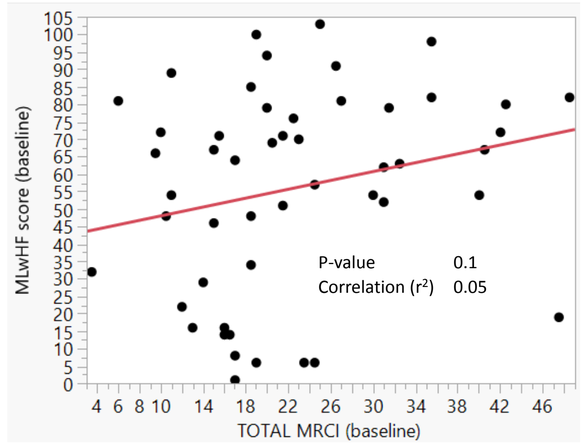
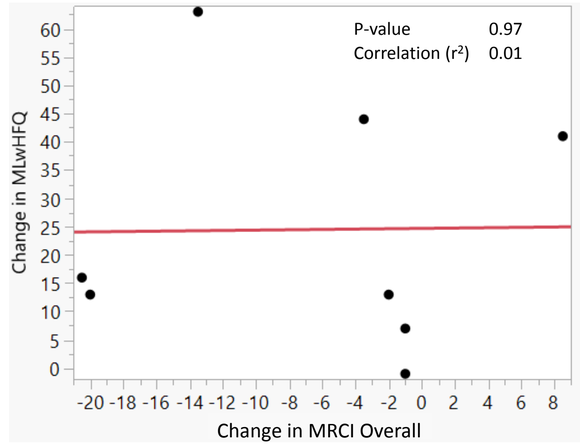


Table 2. Baseline and Follow-Up MRCI & MLwHFQ Scores

	Baseline (n=50)	Follow-Up (n=8)	p-value
MLwHFQ score	63.5 (31.25 – 79.25)	-14.5 (-43.25 - -8.5)	0.02
MRCI score	20 (15.375 – 30.25)	2.75 (1 - 18.375)	0.11
Total # meds	9.5 (7-13)	16.5 (8.5 - 18.75)	**0.04**
# HF meds	3 (2-3)	3 (2.25-4)	1.00
Section Scores			
Section A	4.5 (3-8)	3.5 (1.25-11)	0.31
Section B	12.75 (9.5-16.5)	17.5 (12.6-28.3)	**0.04**
Section C	3 (1-5)	7.5 (4-17)	0.71
Indication			
HF	6 (4-8)	6.5 (5.25-8.5)	0.71
Other dx	11.25 (7.4-17.5)	23.25 (12.1-33.5)	0.13
OTC	2 (0-4)	4 (2.25-7.4)	0.36

Data presented as median (IQR)

Figure 2. Correlation between Follow-Up MRCI & MLwHFQ



Discussion

- There is not evidence of a strong correlation between baseline MLwHFQ & MRCI scores
- Average time to follow-up from baseline was 553.63 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 2.75
  - 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 HFpEF 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

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All authors report no financial disclosures or conflicts of interest. For more information or a reprint of this poster, please contact Bethany Kalich at kalich@uiwtx.edu