Utilization of multiple strategies in the self-care management of chronic diseases: A longitudinal quality improvement project

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Purpose

Objective: The aims of this evidence-based quality improvement project was to improve self-care, knowledge, and quality of life of patients with heart failure (HF) after implementing structured telephone support (STS) and mobile messaging (MM) for participants in the Program of All-inclusive Care for the Elderly (PACE) in Pinellas County, Florida.

Background

- HF is a clinical syndrome in which an individual's heart cannot pump in a manner that supplies a sufficient amount of oxygenated blood to the body's organs.
- Currently 5.7 million Americans are living with HF.
- About half of those will die within five years of being diagnosed with HF (Mozaffarian et al., 2016).
- Patients with HF are expected to follow complex self-care regimen at home.
- Several demographic and psycho-social factors limit patients with HF in following the prescribed recommendations and self-care at home.
- Poor self-care is associated with increased hospital readmissions (Yancy et al., 2013).
- Under the Affordable Care Act (ACA), there are financial implications for hospitals and programs such as PACE.

Methods

Design: This project utilized a pre-post design and data collected at baseline and 30-days on patients with HF

Sample: Fifty-one men and women with a clinical diagnosis of HF defined by the ICD-10-CM and 55 years of age or older, enrolled at the PACE were enrolled. All 51 participants completed the 30-day follow-up at their homes.

Setting: The PACE was interested in better outcome for HF due to financial constraints and penalties. Participants were contacted via telephone and scheduled for a one hour visit at the PACE center or in their homes. During the visit they were consented using the IRB approved consent form and were explained about the STS and MM and the required follow-ups. All consented participants completed the baseline measures and 30-day follow-up at their homes.

Measurements

- **Demographic variables** included age, gender, race and living status.
- **HF Self-care behavior** was assessed using the valid and reliable Self-Care of Heart Failure Index (ScHFi) comprised of 15-items with three sub-scales rated on a 4-point response scale (Chronbach's alpha .56-82).
- **HF knowledge** was measured using the Atlanta Heart Failure Knowledge Test (A-HFKT), a standardized validated instrument that is utilized both in research and clinical settings (Chronbach's alpha .84).
- **Medication adherence** was assessed utilizing the 8-item self-administered Morisky Medication Adherence Questionnaire (MMAQ) (Chronbach's alpha .83).
- The Duke-UNC **Functional Social Support Questionnaire** (FSSQ) was utilized to assess social support (Chronbach's alpha .50-.85).
- **Physical and mental health** was assessed using the SF-12 questionnaire Data were collected at baseline and 30-days (Chronbach's alpha .96).
- **Intervention**: All subjects received STS three times weekly and daily mobile messaging. Subjects were given a mobile phone, weighing scale or sphygmomanometer, if they did not own one.

Results

- A total of 51 participants completed baseline and 30-day follow-up.
- About 90% were 65 years and older, mean age was 77.39 (SD = 9.34) years, 65% were females.
- One-half of the patients lived alone and 23.5% lived in an independent or assisted-living facility.
- 71% were white and 24% were African American.

Table 1. Sample Characteristics of the participants

Characteristics	Number/%	Mean and SD
Age (Mean ±SD)		77.39 + 9.34 years
65 Years and Above	46 (90.2%)	
Gender Male	18 (35%)	
Female	33 (65%)	
Race White	36 (70.6%)	
Black not Hispanic	12 (23.5%)	

Results

- **A Paired T-test** demonstrated that STS and MM significantly improved all self-care scores, HF knowledge, medication adherence, physical and mental health after 30-days.

Table 2: Paired T-test Comparing Baseline and 30-day Follow-up after STS and MM

Outcome Measures	Baseline Mean/SD	30-day F/U Mean/SD	T	Sig
Self-care Maintenance	19.31±3.61	20.55±3.13	.66	.000*
Self-care Management	9.67±4.69	10.16±3.32	.52	.000*
Self-care Confidence	10.73±3.70	10.86±3.57	.45	.001*
HF Knowledge	23.98±2.97	27.82±1.52	.71	.000*
Medication Adherence	3.14±1.47	2.84±1.58	.92	.000*
Social Support	28.90 ±7.69	27.20±10.75	.82	.000*
Short-Form 12	29.26±2.88	29.90±2.90	.81	.000*

* Signifies statistically significant result

- **Repeated measure ANOVA** demonstrated similar improvement at 30-day follow-up after using STS and MM.

Table 3: Repeated Measure ANOVA Comparing Baseline Data with 30-day Follow-up after STS and MM on HF Outcomes

Outcome Measures	F	Sig	Partial Eta Squared	Observed Power
Self-care Maintenance	9.75	0.003*	0.163	.87
Self-care Management	0.73	0.39	0.014	.133
Self-care Confidence	1.14	0.29	0.022	.183
HF Knowledge	159.09	0.0001*	0.761	.991
Medication Adherence	11.87	0.001*	0.190	.922
Social Support	3.76	0.058	0.070	.477
Short-Form 12	5.14	0.028*	0.093	.604

* Signifies statistically significant result

- **Living Status and HF outcomes:** Chi-square analysis demonstrated significant association between living status and HF outcomes.

Table 4: Chi-square Demonstrating Relationship with Living Status and HF Outcomes

Outcome Measures	Chi-square (X)	Std. Error	Sig
Self-Care Maintenance	0.184	0.150	0.196
Self-care Management	0.439	0.139	0.001*
Self- Care Confidence	-0.039	0.138	0.786
HF Knowledge	-0.510	0.126	0.0001*
Social Support	-0.020	0.139	0.891
Short-Form 12	-0.328	0.149	0.019*

* Signifies statistically significant result

Discussion

- All participants improved in all HF outcome measures following STS and MM. Younger participants (less than 65 years of age) performed extremely well compared to older adults in this study.
- These results were similar to those published articles from facilities that implemented more strategies and had significantly lower readmission rates with an average reduction of 0.34 percentage point for each additional strategy (Bradley et al., 2013).
- Gender and race had no significant association with HF outcomes.
- Living status (living with others) had a significant association with HF outcomes.
- This result was disseminated to PACE to continue STS and MM. A training protocol for PACE staff will be developed to implement STS and MM for ALL participants enrolled in PACE.

References

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Acknolwdgements