

Title: Enhanced Telehealth Service with Mobile App (Annie) and Telephone Support to Improve Self-Care and Quality of Life of Patients with Heart Failure

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PROBLEM STATEMENT

- Heart failure (HF) is an end stage of heart conditions affecting 6.2 million Americans per year, resulting in significant symptoms burden and suffering with reduced quality of life (QOL) (Virani et al., 2020).
- HF is a chronic condition that requires long term care. Poor self-care management and QOL results in increased hospital readmissions (Virani et al., 2020).
- Among other chronic conditions seen in the southwestern HF clinic, HF readmission rate remains higher than the national average (SAIL, 2020).
- Although, the southwestern healthcare system has been a leader in the use of telehealth with more than 99,000 patients using the Video Connect app at their homes, resulting in 294,000 virtual telehealth appointments during 2019 (Gorodeski, et al., 2020), however the Telephone education and the Annie app have not been implemented into practice at the HF clinic.

PROJECT PURPOSE

- The clinical question proposed is: For patients with HF, does implementation of an enhanced telehealth service with mobile app (Annie App) and telephone support compared to the current standard care improve self-care and quality of life and thus reduce the number of HF related acute hospital admissions by 20% within 30-days and sustained reduction at 90-days of the project?

The primary outcomes of the QI project

- Improve HF self-care measured using Self-care of HF Index (SCHFI)
- Improve QOL measured using Minnesota Living with HF Questionnaire (MLHFQ).

The secondary outcomes

- Reduced HF-related acute hospital admissions at the clinic by 20% at 30-days compare to the national average and sustained reduction in hospital admissions at 90-days.
- Patient satisfaction on enhanced telehealth service: This will be measured using the telehealth satisfaction questionnaire.
- Compliance and usability with Annie App

THEORITICAL FRAMEWORK: NURSING THEORY

- This QI project used the Information-Motivation-Behavioral skills (IMB) model.
- The IMB model asserts that people who are well informed and motivated will change daily behavioral activities and adhere to self-care recommendations and thus improve outcomes (Fisher et al., 2003).

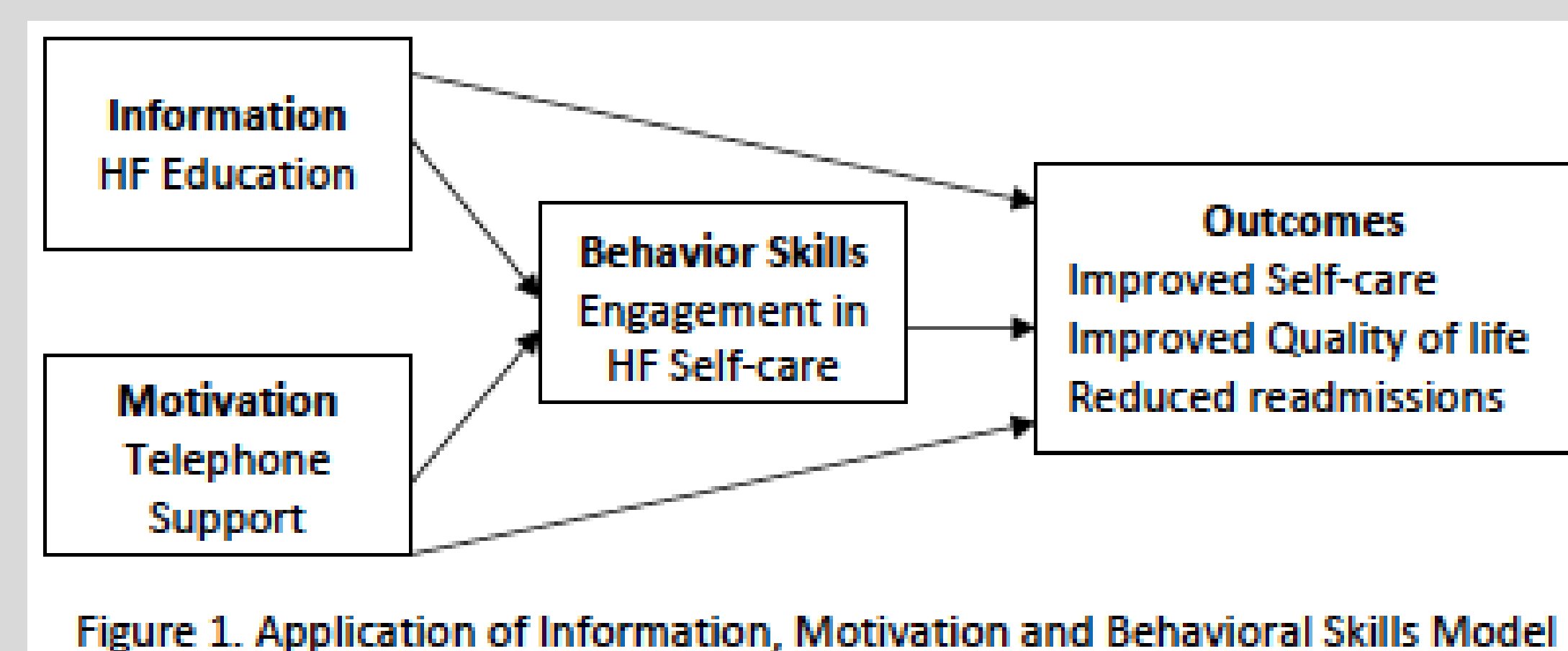
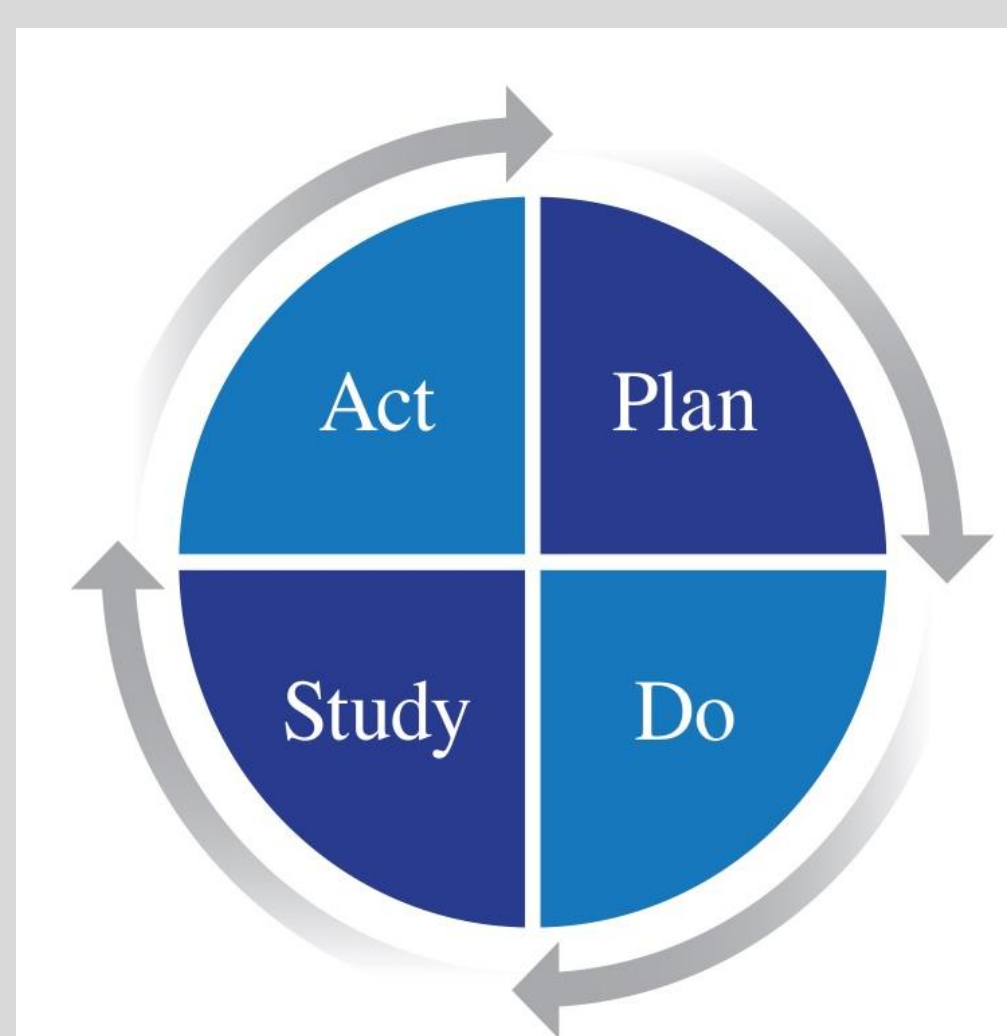


Figure 1. Application of Information, Motivation and Behavioral Skills Model

- The project is also constructed using the Plan-Do-Study-Act (PDSA) model in implementing the results of this study in practice at the southwestern HF clinic.
- It is expected that the implementation strategies will improve self-care and QOL and thus reduce HF related hospital admission.



METHODS

Design: Pre and post evaluation

Subjects: Patients with HF

Number of Participants: 35 patients

Setting

- An outpatient heart failure clinic in the Southwestern Florida region

Outcome Measures/ Instruments

Primary Outcomes

- Self-care of Heart Failure Index (SCHFI), a validated questionnaire that include 22 questions measure self-care management, self-care confidence and self-care maintenance domain (Riegel et al., 2009). Data were rescored for each three domains of self-care and entered in SPSS for analysis.
- The validated Minnesota Living with HF questionnaire (MLHFQ) was used to measure HF related QOL (Heo et al., 2005). The HF clinic has paid subscription for MLHFQ for use research.

Secondary Outcomes

- Readmissions and Emergency Room (ER) visits at 30-and 90-days
- Patient satisfaction on enhanced telehealth service
- Compliance with the Annie app was measured by the number of patients reporting the requested data within the app.

Data Collection

- Baseline: Demographics and Clinical questionnaire, self-care measured by the SCHFI and QOL measured by MLHFQ .
- Follow-up at 30-days and 90-days data on SCHFI and MLHFQ, as well as patient satisfaction questionnaire were completed.
- Number of hospital admissions and ER visits were obtained by chart review at 30-days and 90-days.

RESULTS

Demographic clinical data of the participants are presented in Table 1. Mean and standard deviation (SD) of continuous variable and frequency and percentage for categorical variables were calculated.

	Mean ± SD	Frequency and Percent	Range
Age in Years	65.69 ± 9.65		49-82 years
Gender	Male	34, 97.1	
Race/Ethnicity	White	22, 62.9	
	African American	5, 14.3	
	Hispanic	2, 5.7	
	Others	6, 17.1	
Education	< High School	4, 11.4	
	Highschool/GED	25, 71.4	
	2-4 years College	6, 17.1	
Married		27, 77.1	
NYHA Class	I	4, 11.4	
	II	19, 54.3	
	III	12, 34.3	
Ejection Fraction	43.77 ± 13.64	13, 37	15-60%
Etiology of HF	Ejection Fraction ≤ 40%	13, 37	
	Ischemic	20, 57.1	
	Non-Ischemic	15, 42.9	
BMI	33.30 ± 8.04		18.13-56.7

All 100% of participants reported having a history or currently using alcohol, only 17% were current smokers, all 100% were prescribed beta-blockers and diuretic, 88.6% on ACE inhibitor and 80% on statin. All participants had hypertension, 88.6 had coronary artery disease, and 65.7% had a diagnosis of diabetes and 100% had a diagnosis of depression.

Primary Outcome: Self-care and QOL

Pre and post SCHFI and MLHFQ were compared using a Paired T-test.

	Baseline (Mean, SD) N=35	30-Days FU (Mean, SD) N=34	90-Days FU (Mean, SD) N=32	Std. Error Mean	T-Score	Significance P Value
Self-care Maintenance	24.06 ± 2.62	32.94 ± 1.12	33.17 ± 1.10	0.549	14.437	0.001*
Self-care Management	15.69 ± 3.95	23.15 ± 0.93	23.12 ± 6.63	0.758	9.813	0.001*
Self-care Confidence	14.63 ± 1.74	16.57 ± 3.26	17.16 ± 1.48	0.411	6.151	0.001*
Quality of Life (MLHFQ)	57.88 ± 9.39	61.72 ± 8.89	62.44 ± 9.26	2.29	1.991	0.055

Domains of self-care maintenance, self-care management and self-confidence (SCHFI) significantly improved at 30-days and maintained at significance at 90-days.

The quality of life (MLHFQ) showed closed to being significant at 90-days.

Secondary Outcome: Hospital Admissions and ER Visits

Hospital admissions and ER visits for HF at 30-days and 90-days were extracted from chart audit.

One patient at 30-days and two at 90-days (total 3) died. These participants data were not included in the analysis.

	30-days	90-days
Hospital Admission for HF	1	2
ER Visits Due to HF	2	1

PATIENT SATISFACTION AND ANNIE APP USAGE

- Patients reported high satisfaction with the enhanced self-care model.
- Participants in the study requested to continue using enhanced telehealth educational support.
- Only 15 (43%) of patients used the Annie App due to lack of literacy in using smartphone and pandemic restriction that limited in-person support in training to use the Annie App.
- Self-care management and maintenance improved through weekly enhanced educational support.

IMPLICATION AND SUSTAINABILITY FOR PRACTICE

- The four-week educational telephone support portion of the project is sustainable for the cardiology PACT team.
- There is no additional cost attached to providing the enhanced telehealth service.
- The PACT team will continue to gather information about monthly readmission rates from the HF clinic system.
- Since feasibility of the project is established at the local HF clinic, we propose to implement throughout other HF clinics within that healthcare system.
- Develop a program continue the telephone education support by nurses to all patients attending HF clinic.

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Enhanced Telehealth Service with Annie App and motivational telephone Support demonstrated significant improvement in self-care, quality of life, and reduced readmissions at 30-and 90-days among heart failure patients. Patients reported higher satisfaction in of the enhanced telehealth support.