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**Nurse-Patient Interaction and Rehospitalization Among Older
Persons with Heart Failure in a Skilled Nursing Facility in New York, USA**

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We, the members of the oral examination panel for **MR. AMIL KUSAIN TAN JR.** unanimously approved the thesis entitled **“Nurse-Patient Interaction and Rehospitalization Among Older Persons with Heart Failure in a Skilled Nursing Facility”**. The thesis attached hereto was defended on May 07, 2020, at UPOU Learning Center in Manila for the degree of **Master of Arts in Nursing** is hereby accepted.

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TABLE OF CONTENTS

	Page
Title Page	i
University Permission Page	ii
Certificate of Acceptance of Thesis	iii
Approval Sheet	iv
Table of Contents	v
List of Tables	vii
List of Figures	viii
List of Appendices	ix
Acknowledgment	x
Abstract	xi
Chapter 1: The Research Problem	
Background of the Study	1
Statement of the Problem	16
Research Objectives	17
Research Questions	17
Significance of the Study	18
Chapter 2: Theoretical Background	
Review of Related Literature	21
Synthesis	36
Theoretical Framework	37
Conceptual Framework	41
Operational Definition of Terms	42
Hypothesis	44
Chapter 3: Research Methodology	
Research Design	45

Participants & Sampling Technique	45
Research Setting	46
Research Variables	46
Data Collection	50
Research Instrument	52
Ethical Consideration	55
Chapter 4: Results and Discussion	
The Participants	59
Results and Findings	59
Chapter 5: Summary, Conclusion and Recommendations	
Conclusion	74
Recommendations	75
References	77
Appendices	82

LIST OF TABLES

Table 1.	Ejection Fraction Classification	22
Table 2.	New York Heart Association (NYHA) Functional Class	23
Table 3.	Etiology of Heart Failure in Older Adults	25
Table 4.	Summary of Conceptual-Theoretical-Empirical Linkages	41
Table 5.	Summary of the Nurse-Patient Interaction Instruments	53
Table 6.	Plan for Data Analysis	54
Table 7.	Study Participants Demographic Characteristics	59
Table 8.	Distribution of Age Sub-groups	60
Table 9.	Study Participants Clinical Characteristics	62
Table 10.	Study Participants List of Heart Failure Comorbidities	63
Table 11.	Itemized Description of the Levels of Nurse-Patient Interaction	66
Table 12.	Study Participants Levels of Nurse-Patient Interaction Sub-groups	67
Table 13.	Study Participants 30-day Re-hospitalization	68
Table 14.	Comparative Re-hospitalization Rate Pre-and Post-Program Implementation	68
Table 15.	Correlations Between Demographic Characteristics and Levels of NPI	69
Table 16.	Correlations of Demographic Characteristics and 30-day Re-hospitalization	70
Table 17.	Correlations between Clinical Characteristics and 30-day Re-hospitalization	71
Table 18.	Correlation between Levels of Nurse-Patient Interaction and 30-day Re-hospitalization	72

LIST OF FIGURES

Figure 1.	Quality Care Model Overview	39
Figure 2.	The Quality-Caring Model	40
Figure 3.	Schematic Diagram showing the Interrelationship of Variables	42
Figure 4.	Data Collection Flowchart	52
Figure 5.	Age Sub-group Distribution	60
Figure 6.	Description of the Study Participants Mean NPI Scores Distribution	65

LIST OF APPENDICES

Appendix. A	Nurse-Patient Interaction Scale	82
Appendix. B	Information Package and Informed Consent	85
Appendix. C	Permission to Use Standardized Tool	90
Appendix. D	Ethics Approval Letter	92
Appendix. E	Curriculum Vitae	93

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ABSTRACT

Background: There has been a gap in the literature about the prevalence of heart failure (HF) among older adults in the skilled nursing facility (SNF). Also, the evaluation of interventions to manage symptoms of heart failure is limited. Nurses' role in the promotion, prevention, and management of heart failure is significant. The study aimed to evaluate the outcomes of a Nurse-led interdisciplinary Heart Failure Team NLI-HFTP Program (NLI-HFTP) on the nurse-patient interaction and rehospitalization rate among older adults in a SNF.

Methods: This study was a post-test one-group design, descriptive, and correlational study. The three main variables were NLI-HFTP, nurse-patient interaction, and 30-day rehospitalization rate. A descriptive and correlational analysis was performed.

Results: In this study, 46 participants were mostly young-old age approximately 65–74 elderly group of African American, Non-Hispanic women. Clinical characteristics of older adults with heart failure in the SNF include a primary diagnosis of heart failure which was not unspecified (70%; n=32), had a Class I Mild symptoms NYHA classification (61%; n=28), and a primary heart failure with reduced ejection fraction (46%; n=21). The associated comorbidities were hypertension (89%; n=41), coronary heart disease (72%; n=33), and arrhythmia (46%; n=21). Primarily line of treatment used includes beta-blockers and diuretics. Nurse-patient interaction median is 8.4. Based on the median score, the participants reported a high level of nurse-patient interaction based on a scale of 1-10. The participants reported that their interaction with the nurses makes them feel good. Nurses asking how they are doing made a difference in their reports of nurse-patient interaction. Also, respondents believe that their interaction with nurses is very important for them to thrive. There was

a significant decrease in the 30-day rehospitalization rate among patients with heart failure in this facility after implementing the program. Correlational analyses reported a significant and a very strong association between NYHA classification and the 30-day rehospitalization. No significant association between nurse-patient interaction and 30-day rehospitalization was found in this study.

Conclusion: The findings are congruent with the theoretical assumptions based on the Quality Care Model that caring relationships are linked through a professional encounter of the nurse and patient. The study reported a high level of nurse-patient interaction between the patient and the heart failure team. This encounter can make a significant difference and contribution to the health outcomes of older adults with heart failure. Furthermore, this result provided evidence that a nurse-caring model can organize patient care delivery. Also, the study showed that teamwork and collaboration among healthcare providers is a way to engage and relate to provide the best care for the patient. Finally, this study demonstrated that the NLI-HFTP is a feasible intervention that can be implemented by skilled nursing facilities that can reduce the 30-day rehospitalization rate decreasing heart failure exacerbation incidence among the older adults in the SNF.

CHAPTER 1

THE RESEARCH PROBLEM

BACKGROUND OF THE STUDY

This study is about examining the outcomes of a Nurse-led interdisciplinary Heart Failure Team NLI-HFTP on the nurse-patient interaction and rehospitalization rate among older adults with heart failure (HF) in a skilled nursing facility (SNF). The nurse-patient interaction (NPI) is defined as the nurse's availability and/or actual presence with the patients, and this includes nurses' use of interpersonal skills to provide positive reappraisal, active listening, empathy, and compassion (Haugan, 2013). Patients described NPI as good when the patient had the feeling of being treated respectfully and valued as a person. Studies have shown that NPI promotes physical, emotional, functional, social, and spiritual well-being among cognitively intact nursing home patients (Haugan et al., 2012). This study proposes that by advancing nurses' interaction and communication skills, it will improve the health and well-being of older adults suffering from heart failure in SNF. The outcome rehospitalization is a risk-standardized re-hospitalization rate for beneficiaries who experience unplanned re-hospitalization for any cause to an acute care setting within 30 days of discharge. Currently, SNFs are subject to financial penalties for patients readmitted within 30 days of hospital discharge with a specific diagnosis like heart failure. The Centers for Medicare and Medicaid Services (CMS) is focusing on decreasing avoidable hospitalization across the healthcare continuum, and this includes skilled nursing facilities.

The NLI-HFTP in an affiliated SNF in New York is led by a registered nurse (RN) and an advanced practice nurse (APN). The role of the nurses in the NLI-HFTP is critical because in this program nurses are the front and center leader of the team.

Initially, the nurse leads the team to meet with the patient to develop goals that are patient-centered in managing patient's heart failure. The team then lists the plan and intervention to achieve the patient's and the team's goals. The lead nurse ensures that there are adequate capital and human resource to implement the intervention. In addition, the registered nurses and advanced practice nurses interact with the patient by performing focused clinical assessments about heart failure. During this interaction, nurses' dialogues with the patients about their concerns, determine the self-efficacy of the patient to perform self-management, discuss with the patient their fears and anxiety, and answers patients' questions about heart failure management. This interaction provides an opportunity for the nurses to provide patient education, provide support and encouragement for older adults suffering from heart failure. The literature supports that hospitalized heart failure patients who receive interdisciplinary care have positive health outcomes (Jaarsma, 2005; Lin et al., 2008; Jurgens, 2015) as compared to solo-provider like primary care physicians. Because of the nurse's proximity to the patient, nurses are in the position to lead this type of program in SNF.

A review of the literature about heart failure reported that older adults age 65 have a one percent incidence of developing heart failure. The incidence doubles as the age increase every ten years. The lifetime risk of developing heart failure for both men and women at age 80 is 20% (Mozaffarian et al., 2016; Butrous & Hummel, 2016). The precise prevalence of heart failure among skilled nursing facilities residents is unknown, with estimates ranging between 20% and 37% (Jurgens, 2015). In a study about 16,000 Medicare patients with a mean age of 80 who were discharged from hospital after heart failure treatment, approximately 14% of the older adults discharged to skilled nursing care facilities died within 30 days after hospitalization (Mozaffarian et al., 2016). Within a month of discharge, 27% of the study participants were re-

admitted to the hospital (Dolansky et al., 2016; Mcknight, 2011). Looking at the recent hospitalization metrics of the affiliated SNF in New York, the SNF has an annual average of 26% re-hospitalization rate with the highest noted at 38% in one month compared to the national average of 18%. This is strikingly high and above the national average rate of re-hospitalization for a SNF. With regards to nurse-patient interaction and outcomes. Rorer and Tucker's (1988) first initial study about long-term nurse-patient interactions and non-compliance to the dietary regimen reported that emotionally positive and negative responses of nurses were both positively associated with non-compliance of dietary regimen. In another study, Flood (2009) examined nurse-patient interaction related to diabetic foot care. Results showed that nurse-patient interactions improve foot care promotion, prevented foot complications by early detection, referrals, and interventions to manage diabetes. There is a link between nurses and improving the health outcomes of older adults with heart failure. A study conducted by Sterne et al. (2014) examined the implication of nurses' knowledge of heart failure in decreasing 30-day re-hospitalization rates. A pre-and post-test educational intervention were conducted with 45 registered nurses. The study found that nurses gained knowledge from the educational program that enabled them to provide comprehensive care to their patients. The 30-day re-hospitalization rate for patients with heart failure decreases after nurses attended the educational program.

Statement of the Problem

The prevalence of heart failure in SNF has not been very well described (Jurgens, 2015; Valle et al., 2005;). Even though it is well established that heart failure is one of the common reasons for rehospitalization (Gruneir et al., 2018). The magnitude of this problem needs further examination to determine the demographic and clinical characteristics of heart failure in the SNF. In addition, most studies about

interdisciplinary approach care in heart failure was done in acute care settings (Hamner, 2005; Jaarsma, 2005; Martinen & Freundl, 2004; Sterne et al., 2014). To date, no documented literature evaluated NLI-HFTP type of intervention in the SNF. This is a gap that must be filled. On the other hand, nurse-patient interaction has been associated with improving health outcomes, quality of life and improving patient global well-being (Flood, 2009; Haugan, Hanssen, & Moksnes, 2012; Haugan, 2013; Haugan, Moksnes & Lohre, 2016). The NPI variable is well-matched because the researcher is interested in looking at caring relationships between nurses and patients. Measuring NPI concept is very much appropriate and suitable for the conceptual framework selected. Finally, the outcome 30-day rehospitalization is chosen as a variable to be the secondary outcome because this is a standardized tool used by CMS that is measurable and can be compared across a variety of settings. This study would like to address the gaps by providing evidence to improve the care of older adults with heart failure.

Objectives of the Study

The study aimed to evaluate the outcomes of NLI-HFTP on the nurse-patient interaction and rehospitalization rate among older adults in a SNF.

The Research Questions

1. What are the demographic and clinical characteristics of older adults with heart failure in the SNF?
2. What is the level of nurse-patient interaction after the implementation of the NLI-HFTP among older adults in a SNF?
3. What is the rehospitalization rate after the implementation of the NLI-HFTP among older adults in a SNF?

4. Is there a relationship among the variable's demographic, clinical characteristics, nurse-patient interaction, and 30-day rehospitalization after the interdisciplinary heart failure team program among older adults in a SNF?

Significance of the Study

This study will benefit older adults with heart failure by improving their health outcomes. Furthermore, this study has a significant benefit in improving nursing practice, nursing research, nursing education, and nursing administration in the area of geriatrics and long-term care.

Nursing Practice. This study will address gaps in the literature about the characteristics of older adults with heart failure in SNFs. This study is significant because this will provide evidence that a nurse-led program may have an impact on the outcomes of older adults with heart failure by improving patient satisfaction and reducing rehospitalization. This study highlights that nurse daily interaction with patients and primary care like teaching a patient to monitor their weights, monitoring salt and fluid intake, wearing their TED stockings, participating in rehabilitation and managing co-morbid conditions like diabetes and hypertension will improve their health outcomes. This study will add to the evidence between the relationship of professional nursing service and quality health outcomes. This study provides nurses a "way of being with" patients that can be used to guide interventions, and practice improvements.

Nursing Research. This research will add to the knowledge base about testing the middle-range nursing theory. This study will help further the debate about evaluating the strength and weaknesses of the nursing theory. Fawcett's criteria for analysis and evaluation of theory include significance, internal consistency, parsimony, testability, empirical adequacy, and pragmatic adequacy. There is still a

gap in these criteria. There is a need to evaluate the Quality Caring Model used in this study based on this standard.

Nursing Education. This study will add to the evidence about the role of nurses in patient teaching. Heart failure is a chronic condition that requires an active involvement of the patient. Nurses are in a vital role to provide the information and support patients need to be successful in managing HF.

Nursing Administration. This study will provide evidence that a nurse-caring model in caring for older adults with HF can organize patient care delivery. It will help provide the healthcare team a collaborative framework which is a way to engage and relate with other members of healthcare providers in care that is best "for the patient."

Scope and Limitations of the Study

The study included older adults with heart failure in the SNF who was 65 years old and above based on the definition of older adults by the Center for Medicare and Medicaid Services (CMS). The residents were cognitively intact to participate in the study. The residents had an ICD diagnosis of heart failure. Lastly, the respondents were competent to provide informed consent, can speak, understand, and read English.

There were two major limitations identified in the study namely insufficient sample size and sample selection challenges.

First limitation of this study was the low sample size. Correlational study design often requires large sample sizes to generate a statistical power. We previously calculated the sample size using G*power analysis. The sample size we recruited fell short over the required sample size estimated. This limitation is inherent in healthcare or nursing research. Fortunately, this limitation was overcome by applying non-parametric statistical techniques to analyze small sample sizes.

Another challenge was sample selection. The study recognized that the inclusion and exclusion criteria were too restrictive that it eliminated almost half of the possible participants. In the result section, we noted that there were 68 total respondents (57%) whose BIMS scores was lower than 12 which was deemed cognitively impaired to be able to complete the questionnaire. The researcher fails to recognize that majority of older adults in the SNF were diagnosed with some sort of cognitive/sensory impairment or dementia. What the researcher could have done was to enroll all participants with and without cognitive impairment. Then review all their demographic and clinical characteristics and compare them to those with cognitively impaired individuals to determine if the nurse-patient interaction did not make a difference in terms of 30-day rehospitalization.

CHAPTER 2

THEORETICAL BACKGROUND

REVIEW OF LITERATURE

This chapter presents a review of the literature to support the study about the outcome of older adults with heart failure in a SNF. The chapter consists of five sections namely: the review of literature, synthesis, theoretical, conceptual frameworks, and hypothesis.

A literature search was conducted about heart failure among older adults and management in long-term care. The databases included were CINAHL Complete, MEDLINE Complete, and Health Source: Nursing/Academic Edition. The search terms included were “heart failure”, “long-term care or nursing home”, “elderly or aged or older or elder or geriatric”, “nursing”, “nurse-patient interaction”, “re-hospitalization or rehospitalization”. Initially, the search was limited to ten years however because of the dearth in the number of articles retrieved. The search limit on the date of publication was expanded to open dates. Limiters was set-up to include English language and a full abstract. There were sixteen articles found related to the topic that was included. An additional search was done using gray literature obtained from sources like google scholar.

Heart Failure

Heart Failure (HF) is defined by Heart Failure Society of America as a syndrome characterized by either of both pulmonary or systemic venous congestion and/or inadequate peripheral oxygen delivery, at rest, or during stress caused by cardiac dysfunction (Lindenfeld et al., 2010). Elderly aging >65 years old are commonly affected. There are about 2 million residents in skilled nursing facilities that have a cardiovascular disease such as heart failure (Jurgens, 2015).

Heart failure can be a systolic and diastolic failure. Heart failure with reduced left ventricular ejection fraction (HFrEF; LVEF less than 50%) is a syndrome characterized by signs and symptoms of heart failure with reduced left ventricular ejection fraction. It is associated with left ventricular chamber dilation. Heart failure with preserved left ventricular ejection fraction (HFpEF; LVEF greater than 50%) is a syndrome characterized by signs and symptoms of heart failure with preserved LVEF. Most commonly associated with the non-dilated left ventricular chamber. It can be a result of valvular disease. Myocardial remodeling is pathologic myocardial hypertrophy or dilation in response to increased myocardial stress. These changes are associated with pathologic changes in the cardiac interstitium (Lindefeld et al., 2010).

Table 1 shows the classification of the ejection fraction. It is important to note that the ejection fraction does not necessarily correlate with functional class symptoms.

Table 1. Ejection Fraction Classification

Ejection Fraction (EF) classification	
Hyperdynamic	Great than 70%
Normal	50-70%
Low Normal	50-55%
Mild systolic dysfunction	40-50%
Moderate systolic dysfunction	30-40%
Moderately severe systolic dysfunction	20-30%
Severe Systolic Dysfunction	Less than 20%

The New York Heart Association developed four functional classes for heart failure as shown in Table 2.2. There are multiple possible causes for heart failure such as coronary artery disease, myocardial infarction, ischemia, hypertension, and cardiomyopathy. Precipitating factors for fluid volume overload include non-compliance with medications, renal dysfunctions, anemia, dietary indiscretion, systemic infection, alcohol, pulmonary embolism, atrial fibrillation, and others. Symptoms of heart failure include dyspnea at rest or on exertion, reduction in exercise

capacity, orthopnea, nocturnal dyspnea, edema, and ascites. On the other hand, signs of heart failure include elevated jugular venous pressure, S3 gallop, rales, hepatojugular reflux, ascites, edema, murmurs, narrow pulse pressure, pulses alternans, and others (Lindenfeld et al., 2010).

Table 2. New York Heart Association (NYHA) Functional Class

NYHA Functional Class	
Class I	Ordinary physical activity does not cause undue fatigue, palpitations, or dyspnea.
Class II	Patients are comfortable at rest. Ordinary physical activity results in symptoms.
Class III	Patients are comfortable at rest. Less than ordinary activity causes symptoms.
Class IV	Patients are unable to carry on any activity without symptoms. Symptoms may occur at rest.

Cardiovascular aging in older adults

Aging presents multiple physiologic changes of the cardiovascular structure and function. However, aging per se is not a cause for a person to develop heart failure. According to Strait and Lakatta (2013), there are five essential characteristics of normal cardiovascular aging and the role that aging-associated changes play in reducing the cardiac reserve.

1. Structural changes: The heart and vasculature have increased vascular stiffening, increased left ventricular wall thickness (within normal limits) and fibrosis with aging, leading to diastolic dysfunction, increased afterload, and HF with preserved ejection fraction (HFPEF)
2. Functional changes: The aged heart undergoes diminish the ability to respond to increased workload and decrease its reserve capacity. Changes in maximal heart rate, end-systolic volume (ESV), end-diastolic volume (EDV), contractility,

prolonged systolic contraction, prolonged diastolic relaxation, sympathetic signaling, etc.

3. Cardio protection and Repair Processes: The cardiac mechanisms responsible for protection from injury and injury repair become increasingly defective with age, leading to heightened adverse remodeling and increased dysfunction.
4. Increased cardiovascular disease incidence and prevalence: There is a progressive increase in the prevalence of cardiovascular disease (CVD); e.g., coronary artery disease (CAD), hypertension, and diabetes leading to the development of ischemic, hypertensive, or diabetic cardiomyopathy.
5. Systemic disease/Other organ systems: Aging-associated changes in other organ systems may affect cardiac structure-function and thereby contribute to heart failure development.

With the changes in aging, there is a decline in the protective mechanism of the heart as compared to the young adult's heart which makes the heart susceptible to develop heart failure. Promoting healthy aging, engaging in preventive screenings against cardiac heart diseases, modifying diet and lifestyles, early recognition of signs and symptoms of heart failure, and appropriate diagnosis of heart failure are keys to manage heart failure in older adults.

Heart Failure in Older Adults

Heart failure among older adults is often complex and associated with various comorbidities. It is estimated that older adults age 65 have a one percent incidence in developing heart failure. The incidence doubles as the age increase every ten years. The lifetime risk of developing HF for both men and women at age 80 is 20% (Mozaffarian et al., 2016). A recent systematic literature review that examined the prevalence of heart failure and ventricular dysfunction in older adults showed that both

left ventricular dysfunction (LVD) and heart failure remain common in the older population at large. The prevalence of diastolic dysfunction is increasing and higher than the systolic dysfunction which was previously thought common. Van Riet et al. (2016) reported that the median prevalence of systolic LVD was 5.5% (range 3.3-9.2%) and diastolic LVD was 36.0% (range 15.8-52.8%). All type of heart failure had a median prevalence rate of 11.8% (range 4.7-13.3%) with relatively stable rates in the last decade and with heart failure with preserved ejection fraction (HFpEF) 4.9% (range 3.8-7.4%) being more common than heart failure with reduced ejection fraction (HFrEF) 3.3% (range 2.4-5.8%). This study reports the prevalence of heart failure among community-dwelling older adults.

There is a multifactorial cause of heart failure as outlined in the previous discussion. In this section, the etiology of heart failure in older adults is described. Hirakawa et al. (2017) summarize the findings of the etiology and prevalence of heart failure in older adults (Table 3).

Table 1. Etiology of Heart Failure in Older Adults

Etiology (frequent presentation)		Prevalence
Coronary artery disease (Old myocardial infarction, silent ischemia)	26-32%	
Valvular Heart Disease (Aortic Stenosis, Mitral Regurgitation)	24-38%	
Hypertension (HFpEF)	18-25%	
Cardiomyopathy (dilated and hypertrophic)	18-22%	

In the study of Murad (2015), it is estimated that 60% of the elderly with incident heart failure had three or more comorbidities. Hypertension was the most common associated comorbidity at 82%, followed by coronary heart disease with a 60% prevalence. Other cardiovascular comorbidities include arrhythmias, peripheral

vascular disease, and cardiac valvular disease. Frequent non-cardiac comorbidities include diabetes mellitus, chronic kidney disease, sleep apnea, anemia, malnutrition, depression, arthritis, and cognitive dysfunction (Murad, 2015).

Older Adults with Heart Failure in the SNF

The skilled nursing facility is also known as “nursing home” is defined as an institution that provides a variety of services designed to meet a person's health or personal care needs during a short or long period. These services help people live as independently and safely as possible when they can no longer perform everyday activities on their own (National Institute of Aging [NIA], 2017). It is estimated that there are 1.5 to 2 million older adults who are residents in SNFs in the United States. Cardiovascular diseases remained one of the top morbidities causing older adult disease. Yet, the precise prevalence of heart failure among SNFs residents is unknown, with estimates ranging between 20% and 37.4% (Jurgens, 2015). It is known that older adults with heart failure in SNFs have poor health outcomes and have a higher mortality rate based on the quality-of-care metrics. In a study about 16,000 Medicare patients with a mean age of 80 who were discharged from hospital after heart failure treatment approximately 14% of the older adults discharged to skilled nursing care facilities died within 30 days after (Mozaffarian et al., 2016). Within a month of discharge, 27% of the study participants were re-admitted to the hospital (Mcknight, 2011; Dolansky, Capone, Leister, and Boxer, 2016). Similarly, looking at the researcher's affiliated SNF metrics, the facility has an annual average of 20% 30-day re-hospitalization rate. Comparing these results with the national average according to the Centers for Medicare and Medicaid Services (CMS) in the report for a SNF in April 2017 is at 18%, the facility is close to the average national benchmark. However, when two patient population was separated. The chronic long-term care

residents had an average of 26% re-hospitalization rate with the highest noted at 38% in one month. This is strikingly high and above the national average rate of re-hospitalization for a SNF. Common reasons for facility transfers are shortness of breath, heart failure exacerbation, pneumonia, respiratory arrest, uncontrolled pain, abnormal hemoglobin level, fever, dehydration, skin wound or ulcer, and uncontrolled hypertension. Surprisingly, these reasons are nursing-sensitive problems that can be addressed when proper medical and nursing care protocol is in place in the SNF.

With these preliminary findings, it is clear that patients with heart failure in the United States affect the older adult population. However, according to Díez-Villanueva and Alfonso (2016), older adults remained underrepresented in large clinical trials given the high prevalence rate. Large clinical trials have been done with younger patients with heart failure. The clinical profiles of heart failure are entirely different because older adults have a poor prognosis than younger patients with heart failure. With all the complexities associated with older adults who have heart failure, elderly patients often receive less specialized care. Therefore, there is a need to address the gap to study older adults with heart failure.

Heart Failure Symptom Management in Older Adults

Symptom recognition can be complex with older adults because of the accompanying functional changes brought about by aging. For example, older adults with acute exacerbations of heart failure most frequently complain of new-onset or worsening dyspnea on exertion or paroxysmal nocturnal dyspnea. In older adults' dyspnea can be masked because of lower activity levels and decreased functional capacity. Older adults may not always clearly display the classic signs and symptoms of exacerbation (Konick-McMahan and McKenna, 2003).

The initial evaluation may include the following but are not limited, laboratory studies (CBC, CMP, BNP, Mg²⁺, HbA1c, Lipids, TSH, Iron panel, and urinalysis), EKG, chest X-ray, echocardiogram, sleep study, nuclear stress test, and cardiac catheterization. In terms of diagnostic, a two-dimensional echocardiogram with Doppler flow studies is the gold standard for evaluating heart failure patients in the clinical settings (Jessup et al., 2009). However, this is not the case in a nursing skilled facility where access to these diagnostic procedures is limited. Valle et al. (2005) conducted the study of using the neurohormone pro-BNP (Beta natriuretic peptide) as an indicator for patients with heart failure in the nursing home. The study showed that it could be a marker for death or admission for heart failure in the medium term and it has a vital role in classifying elderly who are at risk for exacerbation.

The American Heart Association (AHA), the Heart Failure Society of America (HFSA), and the Agency for Health Care Policy and Research (AHCPR) cited in Jurgens et al. (2015) recommends the following medications for managing heart failure. ACE inhibitors are the first-line treatment and the cornerstone of heart failure drug therapy. It is recommended to be prescribed even to those with asymptomatic heart failure. Alternatives to ACE inhibitors include Angiotensin II receptor blockers (ARBs) and direct-acting vasodilators. Beta-blockers are also considered first-line treatment, in addition to an ACE inhibitor, for patients with stable heart failure. Beta-blockers can increase survival when they are added to ACE inhibitor therapy. Hydralazine and nitrates should be added through a titration process for African American patients in addition to ACEI/ARB and beta-blockers. Diuretics should be used for volume overload. Their use provides clear clinical benefit in terms of morbidity. Potassium should be used to correct hypokalemia for patients who are chronically treated with non-potassium sparing diuretics. Spironolactone should be

considered for patients with EF less than 30%. Digoxin and warfarin should be used for patients in atrial fibrillation. Lastly, Nitrates should be used for patients with angina.

Nurse Led Interdisciplinary-Heart Failure Team Program

The literature has shown that hospitalized heart failure patients who receive interdisciplinary care have positive health outcomes. An interdisciplinary approach is a gold standard for caring for patients with chronic heart failure. The interdisciplinary approach is needed in heart failure to contribute to the optimal and efficient management of heart failure. Some of the reasons include the complexity of diagnosis of heart failure, the complexity of heart failure treatment, vulnerable elderly, coping with complex lifestyle changes, possible impaired cognitive function and/or depression, and comorbidity (Jaarsma, 2005). These can be better approached with different health care providers to choose the appropriate and individualized patient regimen.

An interdisciplinary approach may consist of two or more of the various providers such as a cardiologist, pharmacists, internists, GPs, heart failure nurses, dietitians, nurse practitioner, social worker, chaplain, dietitian, psychologist, psychiatrist, physical and occupational therapist, and care coordinators.

The principles of interdisciplinary heart failure care include an interdisciplinary approach, evidenced-based treatment, early detection of exacerbations, a patient-centered approach, self-care, continuity of care, and continuous quality improvement. Specifically, the components of interdisciplinary care would include the following but are not limited: appropriate diagnosis to assess the severity of symptoms and determination of etiology, optimal medical management, intense education and counseling, discharge planning, vigilant follow-up attention to behavioral strategies,

addressing barriers to compliance, early attention to signs and symptoms, flexible diuretic regimen, increased access to health care providers and exercise program (Jaarsma, 2005). A study using an interdisciplinary approach to heart failure patients using the shared medical appointment model has shown an improved patient satisfaction, enhance the quality of life, and help reduce hospitalizations while improving provider efficiency (Lin et al., 2008). In another study by Martinen and Freundl (2004) about heart failure in an assisted living facility. The article described the effort of an interdisciplinary protocol in improving heart failure. The protocol addressed the identification of residents with heart failure, appropriate use of ACE inhibitors, weight monitoring, resident and family education, and preventive immunization. The result showed an improvement in the diagnostic information, the use of ACE inhibitors, improve nursing assessment, and symptom management. There has been a positive outcome of the interdisciplinary protocol, but rehospitalization and cost were not studied.

Features of Heart Failure Education Program

A systematic review was conducted and the finding suggested that the heart failure education program must emphasize self-care management. Recommended daily self-care activities for people living with HF include weight monitoring, adherence to a strict medication regimen and low-salt diet, self-monitoring of symptoms, exercise, and regular physician visits (Baptiste et al., 2013). Furthermore, the strategies suggested from the evidence include the implementation of a standardized nurse-guided heart failure patient education program, home-based telephone follow-up interview, and a standardized assessment tool to measure self-care management after hospitalization. Therefore, standardized patient education programs focused on self-

care management can significantly lower the exacerbations of symptoms and re-hospitalizations for heart failure patients.

Role of Registered Nurses and Advanced Practice Nurses

Nurses' knowledge about heart failure can affect their ability to adequately perform health teaching while the patient is admitted and in their discharge education. Inadequate nurse knowledge may lead to insufficient patient education, and insufficient education may decrease patients' ability to perform self-management. Several studies about nurse's knowledge of heart failure have been consistently low (Mahramus et al., 2013). There is a need to improve nurses' knowledge about heart failure management to be able to deliver quality care to older adults with heart failure. A study conducted by Sterne et al. (2014) examined the implication of nurses' knowledge of heart failure in decreasing 30-day re-hospitalization rates. A pre and post-test educational intervention were conducted with 45 registered nurses. The findings showed nurses gained knowledge from the educational program that enabled them to provide comprehensive care to their patients. The 30-day re-hospitalization rate for patients with heart failure decreased after nurses attended an educational program. Gilmour et al. (2013) surveyed the nurses' educational activities with heart failure patients in terms of the topics they addressed and the educational resources they found useful in a medical ward. Nurses reported (70.6%) spend about 20 minutes or less over the hospitalization about educational activities about heart failure. Printed materials were the most commonly used education resource. The most frequent education topics discussed were medication, signs and symptoms, and general information about heart failure. Psychological factors and prognosis information were the topics least discussed with patients. The study highlighted the limited time many respondents spent on educational activities and the need for readily available

educational resources to optimize patient heart failure education opportunities. The finding supports the need for increasing nurse-patient interaction as an opportunity to dialogue and talk about concerns about heart failure and addressing questions of the patient. Similarly, Hamner (2005) examined the role of nursing in improving health outcomes of heart failure patient's post-hospitalization. The investigator noted four models of nursing interventions: home-based nursing interventions, interdisciplinary interventions, heart failure clinics, and telephone- or technology-based nursing interventions. These interventions have been shown to improve clinical outcomes, reduce cost, and improves resource utilization. The nurses play a key role in providing patient education on self-care and support and in a key position to lead and develop approaches to heart failure management in a SNF.

There is still low evidence of the benefits an advanced practice registered nurses in the management of patients with heart failure. Schwarz et al. (2008) conducted a randomized control trial to examine whether telemonitoring by an advanced practice nurse reduces subsequent hospital re-hospitalization, emergency department visits, costs, and risk of hospital re-hospitalization for patients with heart failure. There were 102 patients divided into two groups post-discharge participated in the study. There was no significant difference due to telemonitoring for any outcomes. Caregiver mastery, informal social support, and electronic home monitoring were not significant predictors for the risk of hospital re-hospitalization. Further studies should address the interaction between the advanced practice nurse and patient and follow-up intervention with telemonitoring of patients with heart failure to better target those who are most likely to benefit. In contrast, another study showed that an advanced practice nurse-managed multidisciplinary heart failure clinic improved patient's quality of life and contributed to one hospital's decreased all-cause re-hospitalization rates for

the HF population. Hanson, Aalfs, and Plonczynski (2013) study enrolled patients demonstrated improvement in their quality of life in the emotional, physical, and overall scores across the first 6 months of care. There were significantly fewer 30-day all-cause re-hospitalizations when compared to non-clinic patients. The results of the studies are equivocal. There is a need to conduct a study to demonstrate that advance practice nurse's role impact on patient outcome.

Nurse-patient interaction

Interaction is defined as the observable behavior during communication implying a different perspective (Oliver & Redfern, 1991 in Fleischer et al., 2008). Interaction has a strong association with communication and relationship. There has been an unclear distinction of the terms and often they are used interchangeably. It is thought that interaction is superior to communication because communication is a tool for interaction. It has been suggested in the literature that researchers studying nurse-patient interaction and nurse-patient relationships are studying the same phenomena from a slightly different perspective and there is a suggestion of combining the two (Flood, 2009). Other proponents disagree because nurse-patient relationships which can occur in a long time contact between nurses and patients have drastically been altered by conditions such as social, cultural, economic, legal, and technology allowing nurses to have brief contact with the patient (Flood, 2009). Because of these limited encounters, it is thought that nurse-patient interaction is a more reliable concept to describe this encounter. Although the encounter is brief, it is suggested that there is still a positive outcome even from a single encounter during patient shortened hospital stays (Flood, 2009).

In the literature, the nurse-patient interaction and relationship were described as authentic and adaptive to the patient and situation (Fleischer et al., 2008). This

interaction can bring about positive and negative effects on the nursing experience of the patients. Patients described nurse-patient interaction as good when the patient had the feeling of being treated respectfully and valued as a person. Peplau (1991) is a big proponent of the nurse-patient relationship and firmly believes that it is a set of skills like being a non-judgmental listener, and the ability to convey warmth and understanding. Furthermore, listening behavior is the initial step to develop a nurse-patient communication relationship.

Empirical findings that support the nurse-patient interaction and outcomes of the patient are presented. Rorer and Tucker (1988) initial studies about long-term nurse-patient interactions and non-compliance to the dietary regimen showed that emotionally positive and negative responses of nurses were both positively associated with non-compliance with the dietary regimen. Flood (2009) examined nurse-patient interaction related to diabetic foot care suggested that nurse-patient interactions can occur in different practice settings such as acute care and long-term care. Nurse-patient interaction is necessary to promote foot care, prevent foot complications, early detection, referrals, and interventions to manage diabetes-related foot care. In another study, Haugan, Hanssen, and Moksnes (2012) investigated the association between age, gender, self-transcendence, nurse-patient interaction and multidimensional well-being as the outcome among cognitively intact nursing home residents showed that nurse-patient interaction and self-transcendence are vital resources for promoting well-being physically, emotionally, functionally, socially, and spiritually among cognitively intact nursing home patients. Haugan (2013) further expanded her research this time investigating the associations between hope, meaning in life, self-transcendence, and nurse-patient in a nursing home patient. The results showed that nurse-patient interaction influences hope, meaning in life, and self-transcendence in a cognitively

intact nursing home patient in a structural equation modeling analysis. Advancing nurses interacting and communicating skills will help facilitate the patient's health and global well-being and inspire professional caregivers as they perform their daily care practices. Haugan, Moksnes, and Lohre (2016) studied the same variables of self-transcendence, meaning-in-life, and nurse-patient interaction and its association with quality of life. The findings showed an association between the two variables. The study suggested to include that there is a need for proper educational programs to develop nurses interacting skills in assessing and supporting patients.

The researcher chooses to examine nurse-patient interaction because of the NLI-HFTP in a short encounter usually once a week with the patient. There is an interest to examine if this brief encounter can improve the caring relationship and will eventually improve the health outcomes of older adults with heart failure.

30-day rehospitalization rate

The Centers for Medicare and Medicaid Services is focused on decreasing avoidable hospitalization across the healthcare continuum, this include skilled nursing facilities. Currently, hospitals are subject to financial penalties for patients readmitted within 30 days of hospital discharge with a specific diagnosis like heart failure. The outcome variable of the study is the 30-day re-hospitalization measure. According to CMS, the 30-day re-hospitalization measure is a risk-standardized re-hospitalization rate for beneficiaries age 65 or older who were hospitalized at a short-stay acute-care hospital and experienced unplanned re-hospitalization for any cause to an acute care hospital within 30 days of discharge. A 30-day re-hospitalization rate provides the percent of admissions from an acute care hospital that were readmitted within 30 days. It is calculated by dividing the number of transfers to hospitals by the number of

admissions from the hospital. The national average according to the CMS in the report for a SNF in April 2017 is at 18%.

Synthesis

The prevalence of heart failure in the SNF has not been very well described (Jurgens, 2015; Valle et al., 2005). Even though it is well established that heart failure is one of the common reasons for rehospitalization (Gruneir et al., 2018). The magnitude of this problem needs further studies to determine the demographic and clinical characteristics of heart failure in SNF. This study would like to address this gap by establishing a baseline survey of the characteristics of heart failure patients in SNF.

Most of the studies about Interdisciplinary approach care in HF was done in acute care settings (Hamner, 2005; Jaarsma, 2005; Martinen & Freundl, 2004; Sterne et al., 2014). To date, no documented literature evaluated this type of intervention in the SNF.

Nurse-patient interaction has been associated with improving health outcomes, quality of life, and improving patient global well-being (Flood, 2009; Haugan, Hanssen, & Moksnes, 2012; Haugan, 2013; Haugan, Moksnes & Lohre, 2016). This variable is well-matched because the researcher is interested in looking at the caring relationships of nurses and patients. Measuring this concept is very much appropriate and suitable for the conceptual framework.

The outcome 30-day rehospitalization is chosen as a variable to be the secondary outcome because this is a standardized tool used by CMS that is measurable and can be compared across a variety of settings.

In conclusion, there has been lacking in the prevalence and evaluation of interventions of older adults with heart failure in the SNF. Nurses both RN and APN interaction and role in the promotion, prevention, and management of heart failure is significant. There is a need to justify the study to evaluate the outcomes of older adult patients with heart failure enrolled in an NLI-HFTP in a SNF. Specifically, the outcomes that will be measured include nurse-patient interaction and rehospitalization rates.

Theoretical Framework

The study is based on Duffy and Hoskins Quality Caring Model (QCM) as a framework to evaluate health services. The theory aims to evaluate outcomes pertinent to the quality of care provided by nurses.

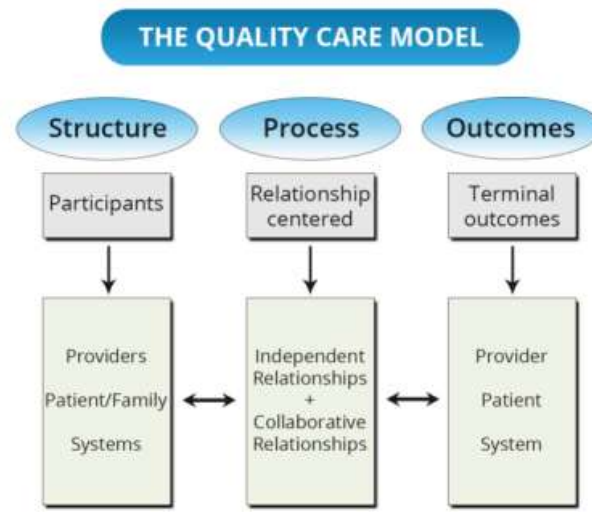
The QCM is a middle-range nursing theory. It is a deductive theory based in borrowed theories from other disciplines grounded mainly in the work of Donabedian's Quality Health Model, Watson's Theory of Human Caring and influenced by King's Theory of Goal attainment, Mitchell's Quality Health Outcomes Model, and Sidani & Hall's Linking Outcomes to Nurse's Role in Healthcare (Duffy, 2015). The model is developed by Joanne Duffy. She is also known to develop the Cardiovascular Center for Outcome Analysis. Duffy developed the QCM in 2003 after making the connection between the patient's perception of quality and patient outcomes. This was initially developed to guide practice and research and now become a tool to measure caring and studying the linkage between nurse caring and selected health-care outcomes. The QCM seeks to describe and explain concepts important to quality healthcare Duffy, J. R. (2015). It supports nursing by focusing on important caring relationships that support its practice. It explains how nursing links to quality.

Propositions of the Quality-Caring Model (Duffy 2015).

1. Caring is a tangible concept that can be measured.
2. Caring relationships are grounded in beliefs about individuals. Humans are multidimensional beings capable of growth and change.
3. Caring relationships require knowledge, self-awareness, and skill.
4. Caring consists of processes that are used individually or in combination and often concurrently.
5. Caring is embedded in the daily work of nursing.
6. Professional nursing work is done in the context of human relationship.
7. Caring relationships benefit both the care provider and the one being cared for.
8. Interaction is necessary for caring groups.
9. Caring relationships influence the attainment of positive health outcomes for patients/families, health care providers, and health care systems.

The QCM involves the structure of care, process of care, and health outcome (Butts and Rich, 2018). The structure is the participants where services are provided. It can provide the provider, patient, family, or the health system. Processes are relationship-centered care delivery and care coordination services. This process can either be an independent relationship or a collaborative relationship type of care delivery system. The health outcome is the quality indicator or criteria used to evaluate the services provided to the provider, patient, or health system (Butts & Rich, 2018). Figure 1 shows the representation of the model.

Figure 1. Duffy and Hoskin (2003) Quality Care Model Overview



Specifically, the QCM (Duffy, Baldwin & Mastorovich, 2008) shows the hidden value of nursing (caring), guides practice, and provides a foundation for outcomes evaluation and research. In this model, the evidence-based practice environment of present-day healthcare is combined with the caring processes of nursing. Caring values, attitudes, and behaviors dominate the process of care and establish the foundation for two key relationships. The independent patient-nurse relationship is primary and includes all interactions and interventions for which nurses are accountable and implement autonomously. Collaborative relationships include “those activities and responsibilities that nurses share with other members of the healthcare team.” Together, these two “relationship-centered professional encounters” dominate the process of nursing and, in concert with certain structural variables, are hypothesized to influence quality healthcare outcomes.

Figure 2. The Quality-Caring Model

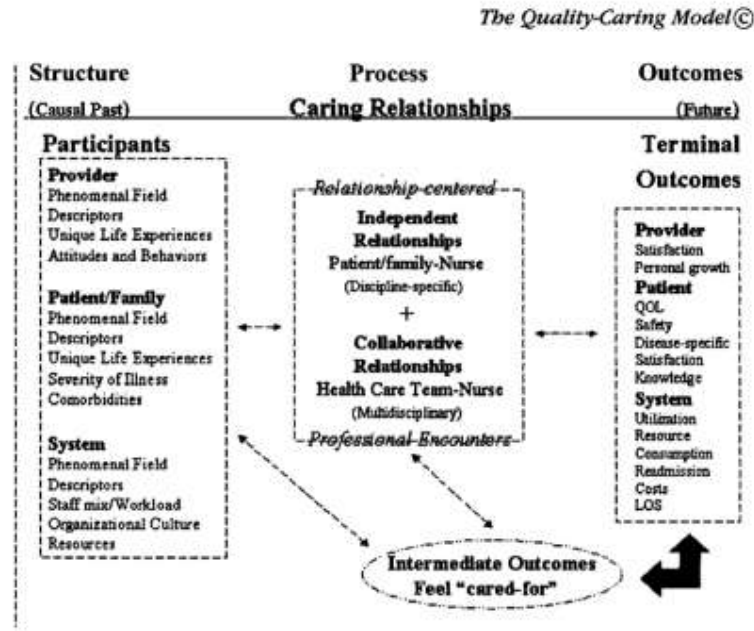


Fig 1. The Quality-Caring Model©.

The advantage of the health care quality model is it eliminates the uncertainties of cost, public expectations, and resource limitations. It helps standardized what quality health care is. This model considers the efficiency of the process to arrive at the highest benefit and the least cost for the patients and the facility (Butts and Rich, 2018). The model is utterly straightforward. Measuring the relationship is easy and predictable. On the other hand, the linearity of the model has been criticized. Failing to recognize how the three constructs interact and influence one another is a limitation of the model (Butts and Rich, 2018).

In this study, Table 4 shows the linkages between the concepts of the QCM and its theoretical linkages in the study. The participants include older adults with heart failure in SNF. The caring relationships are linked through the professional encounter of the nurse and patient. In this study, we are interested in how the interaction between the professional nurses in the heart failure team can make a difference in the health

outcomes of older adults with heart failure. The outcome is measured through system utilization which is rehospitalization rate. Table 4 shows the summary of the C-T-E linkages.

Table 4. Summary of Conceptual-Theoretical-Empirical Linkages

Duffy and Hoskin's Concept	Structure Participants	Process Caring Relationships	Outcomes Terminal Outcomes
Theoretical Linkages	Older adults with heart failure in the SNF	Professional Encounter of the nurse and patient	System utilization
Empirical Indicators	Sample delimitations Enrolled in a NLI-HFTP	Nurse-Patient Interaction Scale	Rehospitalization rate

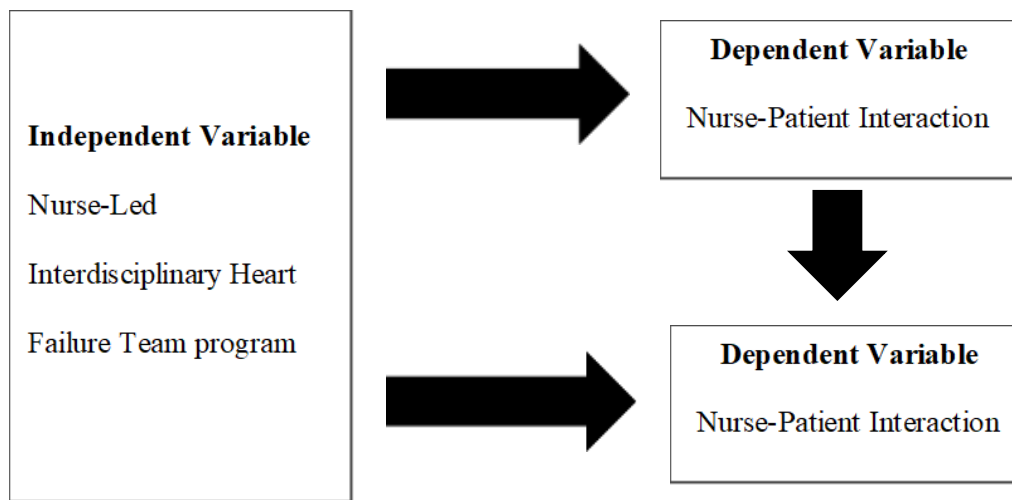
Research Questions

1. What are the demographic and clinical characteristics of older adults with heart failure in the SNF?
2. What is the level of nurse-patient interaction after the implementation of NLI-HFTP among older adults in a SNF?
3. What is the rehospitalization rate after the implementation NLI-HFTP among older adults in a SNF?
4. Is there a relationship among the variable’s demographic, clinical characteristics, nurse-patient interaction, and 30-day rehospitalization after the interdisciplinary heart failure team program among older adults in a SNF?

Conceptual Framework

Figure 3 shows the interrelationship between the variables of the study. There are three variables used in the study namely: one independent variable and two dependent variables.

Figure 3. Schematic Diagram Showing the Interrelationship of Variables



The independent variable or also known as the intervention variable will be the NLI-HFTP program. The dependent variables or also known as the outcome variables were the Nurse-Patient Interaction and the 30-day rehospitalization rate. The researcher sought to evaluate the program in terms of improving the nurse-patient interaction and reducing the number of rehospitalization rates to the hospital. Furthermore, based on the theory there is a strong linkage between the caring relationships which is measured as nurse-patient interaction and the patient outcome which was a 30-day rehospitalization rate. In this study, we investigated the relationship between nurse-patient interaction and the 30-day rehospitalization rate. The population of the study was older adults with heart failure in the SNF. The selection of the variables was derived from the available literature and the theoretical framework from Duffy and Hoskins Quality-Caring Model.

Operational Definitions

Nurse Led Interdisciplinary-Heart Failure Team Program. It is an initiative program developed to provide focus care on older adults who suffered from heart

failure. Operationally, the program is headed by a professional registered nurse and an advance practice nurse who work collaboratively with another provider such as a dietitian, rehabilitation, social services, and medical specialty provider such as the cardiologist.

Nurse-patient interaction. It includes nurse's availability and actual presence with the patients, and nurses use of interpersonal skills to provide positive reappraisal, active listening, showing empathy, and compassion (Haugan, 2013). In this study, the nurse-patient interaction is operationalized by the nurse-patient interaction scale (NPIS) which is a one-dimensional tool consisting of 14 Likert-scaled items that together identify characteristics of a sound nurse-patient interaction promoting well-being. The NPIS is a ten-point scale ranging from 1 (not at all) to 10 (very much), higher numbers indicating better nurse-patient interaction.

30-day Rehospitalization Rate. According to the Center for Medicare and Medicaid Services (CMS), the 30-day re-hospitalization measure is a risk-standardized re-hospitalization rate for beneficiaries age 65 or older who were hospitalized at a short-stay acute-care hospital and experienced unplanned re-hospitalization for any cause to an acute care hospital within 30 days of discharge. In this study, the rate is calculated by identifying individual residents admitted to the facility after an inpatient hospital stay during a given period, usually calculated monthly, and following them for 30 days.

Hypotheses

Null Hypotheses

- 1) There is no association between the participant's demographic characteristics and the level of nurses-patient interaction after the interdisciplinary heart failure team program among older adults in a SNF.
- 2) There is no association between the participant's demographic characteristics and the 30-day rehospitalization after the interdisciplinary heart failure team program among older adults in a SNF.
- 3) There is no association between the clinical characteristics and 30-day rehospitalization after the interdisciplinary heart failure team program among older adults in a SNF.
- 4) There is no association between the level of nurses-patient interaction (low, medium, or high) and 30-day rehospitalization (yes or no) after the interdisciplinary heart failure team program among older adults in a SNF.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter provides details about the methodology for conducting the research. This chapter includes the research design, the intervention, sample, and sampling techniques, the research setting, data collection procedures, the research instrument, and the plan for data analysis and data management. Ethical considerations are included in this chapter. The study aimed to evaluate the outcomes of an NLI-HFTP on the nurse-patient interaction and rehospitalization rate among older adults in a SNF.

Research Design

The study used a post-test group design, descriptive, and correlational study design. Descriptive research is a design that seeks to accurately portray the characteristics of person, situations, or phenomena (Polit and Beck, 2008). In our study, we described the demographic and clinical characteristics of older adults with heart failure in the SNF, the level of nurse-patient interaction and the rehospitalization rate after the NLI-HFTP among older adults in a SNF. Moreover, correlational research explores the interrelationships among variables of interest (Polit and Beck, 2008). In this study, we evaluated the relationship between the level of nurses-patient interaction and rehospitalization rate after the interdisciplinary heart failure team program among older adults in a SNF.

Participants and Sampling Technique

The eligibility criteria for participants were the following: (1) the resident's age included 65 years old and above based on the definition of older adults by the Center for Medicare and Medicaid Services; (2) the residents were considered “cognitively intact” if they were able to Brief Interview for Mental Status (BIMS) complete the BIMS

and scored between 13 and 15; (3) the residents had a diagnosis of heart failure in the PRI (Patient Review Instrument) in their hospital discharges or diagnosis of heart failure by a medical doctor for long-term care residents; (4) the resident was competent to provide informed consent; (5) the resident was able to speak, understand and read English.

A G*power analysis was done. A priori power analysis was calculated using the exact test of the family of correlation: bivariate normal model. The analysis was set into two tails, given an alpha of 0.05, power of 0.80, and Cohen effect size of 0.30. The total sample size needed is 84 samples.

Setting

This study was conducted in a 520-bed capacity SNF in Manhattan, New York. There are two types of patients admitted in the facility, the long-term care residents and sub-acute or short-term patients requiring rehabilitation services. The facility has an expansive program of therapies both standard and unique. It has a short-term rehabilitation program that is designed to help patients regain mobility and independence, with a focus on helping patients reintegrate into their familiar daily routine. Therapies include cardiac rehabilitation, pulmonary rehabilitation, physical therapy, neurological rehabilitation, orthopedic rehabilitation, occupational therapy, speech therapy, enteral nutrition support, and sensory stimulation.

Research Variables

There were three main variables identified in the study plan namely, one independent variable and two dependent variables. The independent variable included the NLI-HFTP as an interventional program. The dependent variables were nurse-patient interaction and 30-day rehospitalization rates.

Intervention variable. The NLI-HFTP is a new innovative program developed by nurses as a quality improvement project. The purpose is to improve the care of older adults with heart failure in the SNF by preventing rehospitalization and managing symptoms.

Features of the program included a standardized tool to assess the patient and protocols of the provider's role in the program. The team used a tool called Nursing Heart Failure intake form developed from proposed guidelines for quality assurance and performance improvement in healthcare for older adults with heart failure (Parisi, Shea & Noel, 2017). The monitoring tools which look at the assessment of nurses included the following:

- Dyspnea, Fatigue, Orthopnea (consider the use of multiple pillows at night), Respiratory effort
- Chest pain or pressure or other related pain
- Abdominal distention
- Vital signs, blood pressure, sitting and standing with signs of dizziness or lightheadedness
- Daily weight log
- Assessment of extremities for edema; pulse; color; temperature
- Understanding of heart failure, previous education and willingness to learn and participate in self-care and/or identification and education of the available caregiver
- Compliance to prescribed diet or fluid restrictions, change or decrease in appetite
- Medication adherence (medications may include an Angiotensin-Converting Enzyme Inhibitor, Angiotensin II Receptor Blocker or Beta Blocker)

Furthermore, the role of registered nurses, advanced practice nurses, and other healthcare team members was clearly delineated. The following were the specific roles assumed by the providers.

Role of Registered Nurse in the program. The RN was the lead coordinator of the program. The RN together with the nurse practitioner rounded on all heart failure patients admitted to the facility weekly.

- The nurse performed nursing assessment by assessing vital signs, measuring jugular venous distention, auscultating the chest and heart for abnormalities, and assess for edema.
- The nurse checked if the patient is adherent to prescribed regimen such as medications, weight, diet regimen, wearing of TED hose stockings, fluid restrictions, and leg evaluation.
- The nurse together with the team developed a patient-centered goal.
- The RN was responsible for health teaching provided to the patients such as the importance of compliance to diet and medication and reporting signs and symptoms significant to change in the status of heart failure.

Role of the Advance Nurse Practitioner (NP). The role of the NP was to perform the assessment and develop a diagnosis for heart failure patients, prescribes, and adjusts medication such as diuretics, hypertensive, diabetes medication, and others. The NP worked together with the RN in developing a plan of care every week.

Role of the Certified Nursing Assistant (CNA). The CNA's measured the weight of the daily patient recording and reporting to the registered nurse and the clinical dietitian.

Role of the Cardiologist. The cardiology was affiliated with our partner hospital. The RN and NP meet regularly weekly presenting their findings of the patient weekly. The

cardiologist helped provide an additional recommendation on laboratory, diagnostics, and adjustment of the patient's medication. The Cardiology did not physically come to the facility to see the patient but provided services through online technology.

Role of the Registered Clinical Dietitian (RD). The RD participated in the weekly round of the patient. The RD interviewed the patient in terms of diet preference and prescribes appropriate dietary regimen for the patient. During the rounds, the dietitian investigated oral food and fluid intake. Furthermore, the dietitian provided health teaching about managing salt and fluid restrictions.

Role of the Clinical Social Worker (SW). The SW discussed discharge plans for the patient, assess the living condition of the patient, and the support that patients have. After an assessment, the SW developed the discharge goals with the team and the patient. The SW coordinated the home health care, follow-up for the patient, and coordinating home rehabilitation services. Furthermore, SW provided support and encouragement for patient mental wellbeing like addressing psychosocial issues (consider what might lead to exacerbation of heart failure, such as diet, dining out, access to shopping/food, ability to afford groceries, travel). The social worker provided instructions when to contact the primary care provider or emergency services and ensured that follow-up that the patient was seen by a primary care provider within 14 days of discharge.

Outcome 1 variable. Nurse-Patient Interaction. We used a basic one group posttest-only design. An experimental design in which data were collected from subjects only after the intervention has been introduced (Polit and Beck, 2008). In this study, because of the limitation in recruiting samples, there will be no randomization. The study included participants who had been exposed to the intervention at least four times. This was equivalent to one-month exposure which means once weekly.

Outcome 2 variable. 30-day HF rehospitalization rates. First, existing data about 30-day rehospitalization was collected 3 months before and 3 months after the implementation of the program. Second, the group of participants who completed the survey was followed for one month to check whether they were readmitted within the span of 30-days.

R-----X----- (1 month) ----- O1 ----- (1 month) ----- O2

[NPI] [30-day rehospitalization]

Where R stands for the recruitment of the participants. X means intervention. O1 stands for the first outcome where we measure the level of nurse-patient interaction and O2 stands for the second outcome which was determining if they got hospitalized in 30-days.

Data Collection

Before data collection. Human subject approval was sought via IRB from the University of the Philippine Open University. A letter stating approval from the Ethical Review Board along with the detailed description of the study was sent to the nursing home administrator and the director of nursing to ask for permission to conduct the study. The 30-day rehospitalization monthly rates were obtained through the facility Quality Assurance Committee (QAC) who maintained the data. The list of older adults with heart failure and the control group was obtained through the registered nurse coordinator of the program. The nurse managers were approached to help with the recruitment of the patients who were interested in participating in the study.

During data collection. The nurse manager was given both oral and written information to the patients about their rights as participants and their right to withdraw from the study at any time. The participants were given the research package.

The first part included the participant information sheet, which had the description of the study and purpose, the researcher and advisor contact number, and a statement that ensure confidentiality of all the information obtained during the study process.

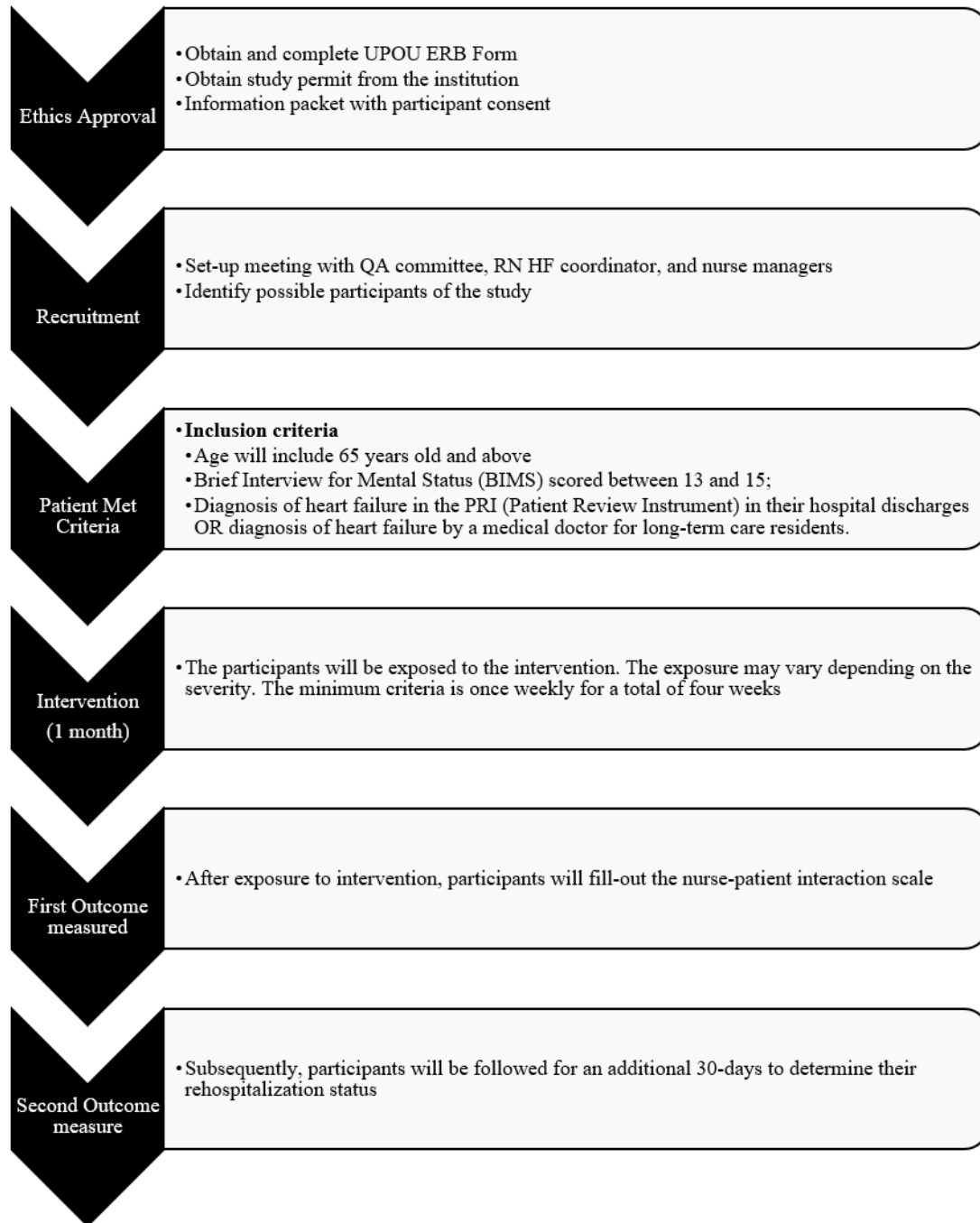
The second part had the consent to participate in the study which was signed by the participant and researcher who obtained the consent. The third part was the questionnaire about nurse-patient interaction. The last part was the demographic information of the participants. The participant was provided thirty minutes to complete the survey.

After data collection. At the end of the given time, the nurse manager personally collected the questionnaire. The attrition rate was calculated and documented accordingly. Questionnaires were checked for completeness and accuracy before placing them in the secured envelope.

The completed forms were scanned to make an electronic copy file that was sent to the primary researcher. The hard-copied documents were locked in a file cabinet, to which only the primary researcher and the research advisor had access. The completed forms were saved for five years from the collection date and will be discarded by the researcher using the paper shredder. And destroying the electronic copies of the survey.

Below is a flowchart to show the data collection procedures (see figure 4).

Figure 4. Data Collection Flowchart



Research Instrument

A search in the database APA Psych net about instruments available to measure the concept of nurse-patient interaction was conducted. The search yield three instruments: The Nine attributes of Nurse-Patient Interaction (NANPI), the Nurse-Patient Interaction and Rehospitalization in SNF

Caring Nurse-Patient Interaction (CNPI) long and short scale, and the Nurse-Patient Interaction Scale (NPI). Table 5 shows a summary of the available tools and their characteristics. In this study, the Nurse-Patient Interaction Scale (NPIS) is selected. The NPIS was selected because of its good psychometric measures, the brevity, and practicality for use to the older adult population. Lastly, the instrument was used and tested among older adults and in the nursing home setting which resembles the population and the current setting of the study. See appendix A for the nurse-patient interaction questionnaire.

The Nurse-Patient Interaction Scale (NPIS). It was developed by Dr. Haugan to identify important characteristics of nursing home patients' experiences of their nurse-patient interaction (Haugan, Hanssen, Rannestad, et al., 2012). It has a one-dimensional construct. The items were developed to measure the NH patients' ability to derive a sense of subjective well-being through the nurse-patient interaction.

Scoring. The NPIS comprises 14 items measured on a 10-point scale ranging from 1 (not at all) to 10 (very much); higher numbers indicate better nurse-patient interaction. The highest score is 140, and the least score is 14. Q10 is reverse scoring.

Validity and Reliability. The NPIS has shown good psychometric properties with good content validity and reliability among nursing home patients (Haugan, Hanssen, Rannestad, et al., 2012). Cronbach's alpha ($\alpha = .92$) and composite reliability ($\rho = .82$) were good.

Table 5. Summary of the Nurse-Patient Interaction Instruments

Name of Instrument	Author and Year	No. of Items	Constructs	Validity and Reliability	Comments
Nine attributes of Nurse-Patient	De Guzman et al. (2014)	36 items	Nonverbal Communication; Nurse-Patient Interaction;	No reliability No validity No factor analysis	The University of Santo Tomas, College of

Interaction (NANPI)			Verbal Communication		Nursing, Philippines
Caring Nurse-Patient Interaction (CNPI) long and short scale	Cossette et al. (2008)	70 items	Clinical Care; Relational Care; Humanistic care; Comforting care	Reliability 0.91 to 0.95 for a total score.	Sample: Male Geriatric Prisoners The University of Montreal, Faculty of Nursing, Canada
		23 items		Validity 0.66 to 0.83 Factor Analysis KMO= 0.953 and Bartlett test of sphericity is adequate	Sample: Nursing Students
Nurse-Patient Interaction Scale (NPI)	Haugan et al. (2012)	14 items	Nurse-Patient Interaction	Cronbach's alpha (α =.92) and composite reliability (ρ = .82)	Sor-Trondelag University, Faculty of Nursing, Norway
					Sample: Nursing Home Patients

Plan for data analysis and data management

A statistical package for social sciences (IBM SPSS) version 17.0 was used for statistical analysis. A two-sided *P* value <0.05 was considered as statistically significant in this study.

Table 6. Plan for Data Analysis

Tools	Research Hypothesis	Question and Variables and Measures	Statistical Treatment
Demographics and Clinical characteristics	What are the demographic and clinical characteristics of older	Nominal, Ordinal, Interval	Frequency, percentages, measures of central

Nurse-Patient Interaction Scale	adults with heart failure in the SNF? What is the level of nurse-patient interaction after the implementation of NLI-HFTP among older adults in a SNF?	Nominal, Ordinal, Interval	tendency (mean, standard deviation). Frequency, percentages, measures of central tendency (mean, standard deviation). t-tests/chi-square tests
30-day rehospitalization rate	What is the rehospitalization rate after the implementation of NLI-HFTP among older adults in a SNF?	Nominal, Ordinal, Interval	Frequency, percentages, measures of central tendency (mean, standard deviation).
Clinical, Demographic, NPI Scale, and 30-day rehospitalization outcome	Is there a relationship among the variable's demographic, clinical characteristics, nurse-patient interaction, and 30-day rehospitalization after the interdisciplinary heart failure team program among older adults in a SNF?	Nominal, Ordinal, Interval	Correlational analysis Alpha level at 0.05 two tails

For descriptive statistics, frequency, percentages, measures of central tendency (mean, standard deviation), tests of normality were analyzed for the demographic and clinical characteristics of older adults with heart failure patients. Furthermore, the first outcome of the 30-day rehospitalization rate was calculated by dividing the number of transfers to the hospital by the number of admissions from resident days.

For inferential statistics, a non-parametric test was used mainly because of the sample size. We ensure that assumptions were met before running the tests. The test includes the Chi-square, the Spearman rho's, the Point-Biserial correlation and the Cramer's V to determine the significance and strength of the relationships.

Ethical considerations

The following are the ethical considerations taken into account in this study. Permission to use the tool from Dr. Haugan was obtained through a permission request form provided by the author and submission via email. Ethical approval from

the institutional review board of the University of the Philippines Open University was sought before the conduct of the study.

Once the study was approved. Facility approval was requested from the management before the conduct of research. Participant selection was based on the inclusion and exclusion criteria of this study where respondents can contribute much to our understanding and knowledge about the outcomes of this intervention in your perception of nurse-patient interaction and the rehospitalization outcome. Participation in this research was entirely voluntary. Respondents were provided with a choice whether to participate or not. If they choose not to participate, all the services they receive at this facility will continue and nothing will change.

Procedures were explained and interventions were discussed with the respondents. The nurse manager gave both oral and written information to the respondents about their rights as participants and their right to withdraw from the study at any time.

A research package was provided to the participants. The first part had the participant information sheet, which will contain the description of the study and purpose, the researcher and advisor contact number, and a statement that ensure confidentiality of all the information obtained during the study process. The second part had the consent to participate in the study which will be signed by the participant and researcher who obtained the consent. The third part had a questionnaire about nurse-patient interaction. The last part will be the demographic information of the participants.

Data handling that will provide confidentiality was maintained. The completed forms scanned to make an electronic copy file that was sent to the primary researcher. The hard-copied documents were locked in a file cabinet, to which only the primary

researcher and the research advisor will have access. The completed forms will be saved for five years from the collection date and will be discarded by the researcher using the paper shredder. The electronic copies of the survey will be deleted.

The duration of the study was discussed with the respondents. The survey took 20 minutes. This was collected patient room. They were offered to ask questions as they wish.

Benefits were discussed to the respondents. This study will benefit older adults with heart failure by improving their health status. If respondents participated in this research, he/she will have the following benefits: your medical condition specifically heart failure status was monitored weekly. There may not be any benefit for them directly but their participation was likely to help us find the answer to the research question. There may not be any benefit to the society at this stage of the research, but future generations are likely to benefit.

Confidentiality was discussed. Federal law protects respondents' rights to privacy concerning Protected Health Information (PHI). As part of this study, we collected selected PHI such as name, date of admission, and health conditions. The research being done may draw attention but we assured that no sharing information about them to anyone outside of the research team. The information collected from this research project will be kept private. Any information about them will have a number on it instead of their name. Only the researchers had what their number is and sealed that information. It was not shared with or given to anyone except the researcher who will have access to the information.

The right to withdraw in the study was discussed. Respondents did not have to take part in this research if he/she did not wish to do so, and choose to withdraw their participation. He/she can do so at any period. It is the respondent's choice and all of

his/her rights were respected. Non-participating did not affect the health care delivery service provided to respondents by the facility. He/she continued to receive the NLI-HFTP visits weekly.

Protection from harm was included. There was minimal risk associated with the study. However, if any unintended psychological problems may arise from participating in this research. A referral to the in-house psychologist and psychiatrist was provided to the participants.

Access to research records was provided. During this study, the respondents had access to their protected health information, research record, and any study information that was part of that record.

Lastly, the contact information of the researcher and the supervisor for questions or problems were given in the informed consent.

Chapter 4

RESULTS AND DISCUSSIONS

This chapter analyses, interpret, present the data, and discussed gathered from the survey of the respondents regarding the outcomes of an NLI-HFTP on the nurse-patient interaction and rehospitalization rate among older adults in a SNF. The presentation of the results and findings is arranged according to the research questions set in the study.

The Participants

A convenience sample of 120 participants was enrolled in the NLI-HFT program from September to December 2019. There were 68 total respondents (57%) whose BIMS scores is lower than 12 which was deemed cognitively impaired to be able to complete the questionnaire were excluded. In total there were 46 participants (38%) who were able to complete the survey and six participants (5%) refused to be included in the study.

Results and Findings

1. What are the demographic and clinical characteristics of older adults with heart failure in the SNF?

Table 7. Study Participants Demographic Characteristics

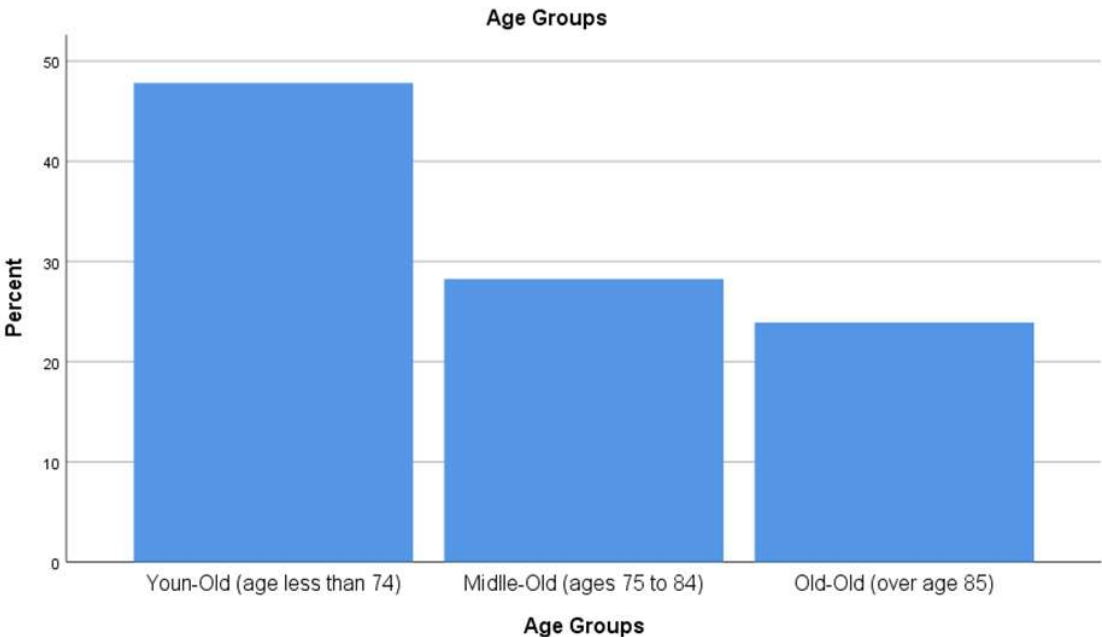
Demographics N=46		Frequency	Percentage	Mean	Standard Deviation
Sex	Male	20	44%		
	Female	26	56%		
Race	White	18	39%		
	African American	27	59%		
	Asian	1	2%		
Ethnicity	Non-Hispanic	39	85%		
	Hispanic	7	15%		
Age	Min=65; Max=98			76.0	11.37

Study participants were primarily female, African American, and Non-Hispanic ethnicity with an average age of 76 years old (Table 4.1). The older adult population can be divided into three life-stage subgroups: the young-old (approximately 65–74), the middle-old (ages 75–84), and the old-old (over age 85) (NIA, 2017). A further sub-analysis on the age subgroups showed that participants are young-old groups aging less than 74 (Table 4.2).

Table 8. Distribution of Age Sub-groups

Age Groups	Frequency	Percentage
Young-Old (age less than 74)	22	47.8%
Middle-Old (ages 75 to 84)	13	28.3%
Old-Old (over age 85)	11	23.9%
Total	46	100%

Figure 5. Age Sub-group Distribution



In this study, participants were mostly African American elderly women. This finding mirrors the statistics about African Americans and heart diseases. Cardiovascular disease is responsible for 50,000 mortality per year among African

American women (American Heart Association, 2020). About fifty percent of African-American women ages 20 and older are diagnosed with heart disease. Previous studies found that the African-American population has higher rates of obesity and diabetes which puts them at greater risk for high blood pressure and heart disease compared with other populations. Furthermore, African-Americans have a gene that is sensitive to the outcomes of salt, which in turn increases the risk of developing high blood pressure (American Heart Association, 2020). This finding adds to the literature about the demographic population affected in SNF to target intervention that addresses the specific needs of African American women in terms of medications and education.

Recently there has been a growing awareness about the research gap involving older adults in research. As previously discussed, older adults remained underrepresented in heart failure trials given the high prevalence rate (Díez-Villanueva & Alfonso, 2016). While the involvement of older people in research is feasible, there are specific challenges related to older adult research that must be considered. Given our older age population (*mean*=76 y.o.). Strategies to enhance effective involvement include a thoughtful choice of location, use of visualization and accessible communication, building good relationships, and flexible approaches (Schilling & Gerhardus, 2017). These challenges were notable in the conduct of this study where older adults had difficulty reading the questionnaire even though the fonts are enlarged because they forgot their eyeglasses or visual acuity needs re-evaluation. To augment this issue, the researcher and the team had to read the questions to older adults. Also, some of the participants had hearing impairments that the team had to use an amplification device. The sensory and perceptual impairments remain a challenge in

this group that must be considered. This study adds to the literature about heart failure among older adults and the challenges associated with research among older adults.

Table 9. Study Participants Clinical Characteristics

Clinical Characteristics			Frequency	Percentage	Mean	SD
Primary Diagnoses	Systolic Heart Failure		2	4%		
	Diastolic Heart Failure		8	17%		
	Combined Systolic and Diastolic Heart Failure		4	9%		
	Heart Failure unspecified		32	70%		
NYHA Classification	Class I Mild		28	61%		
	Class 2 Mild		17	37%		
	Class 3 Moderate		1	2%		
Heart Failure Type Medications	HFpEF		16	35%		
	HFrEF		21	46%		
	ACEI/ARBS		19	41%		
	Beta-Blockers		31	67%		
	Hydralazine/ISDN		6	13%		
	Digoxin		1	2%		
	Diuretics		30	65%		
	Oral Direct Thrombin Inhibitors		27	59%		
Number of Comorbidities		Min=0; Max=5			2.5	1.02

The clinical characteristics of the participants consisted mostly of a primary diagnosis of heart failure which was not unspecified (70%; n=32), with Class I Mild symptoms NYHA classification (61%; n=28), and primary heart failure with reduced ejection fraction (46%; n=21). Additional clinical characteristics are listed in Table 4.3. Study participants had an average of 2.5 associated comorbidities. Top three heart

failure associated comorbidities include hypertension (89%; n=41), coronary heart disease (72%; n=33), and arrhythmia (46%; n=21). See table 4.4 for additional data.

Table 10. Study Participants List of Heart Failure Comorbidities

Type of Comorbidities	Frequency	Percentage
Hypertension	41	89%
Coronary Heart Disease	33	72%
Arrhythmia	21	46%
Peripheral Vascular Disease	16	35%
Valvular Heart Disease	5	11%

The participant's clinical characteristics consisted mostly of a primary diagnosis of heart failure which was not unspecified. The finding suggests that healthcare providers in long-term care are not properly identifying and categorizing the type of heart failure among elderly residents in the SNF. There is good evidence that this is problematic in two respects: first, concerning the correct diagnosis of the presence or absence of HF; and second, concerning the correct categorization of the type of HF, if HF is indeed present (Deaton and Benson, 2016).

A correct diagnosis of the specific type of heart failure makes a huge difference in the care for the patients with heart failure to receive appropriate intervention and management. Moreover, this study reported a similar finding to previous studies in hospital settings (Hirakawa et al., 2017; Murad, 2015). Knowing the associated comorbidities will be able to manage the heart failure by instituting preventive measures such as ensuring the blood pressure are controlled, anti-hyperlipidemic is part of the management for coronary heart disease, and ensuring anti-coagulants are in placed to manage arrhythmia such as atrial fibrillation which is common among this cohort groups.

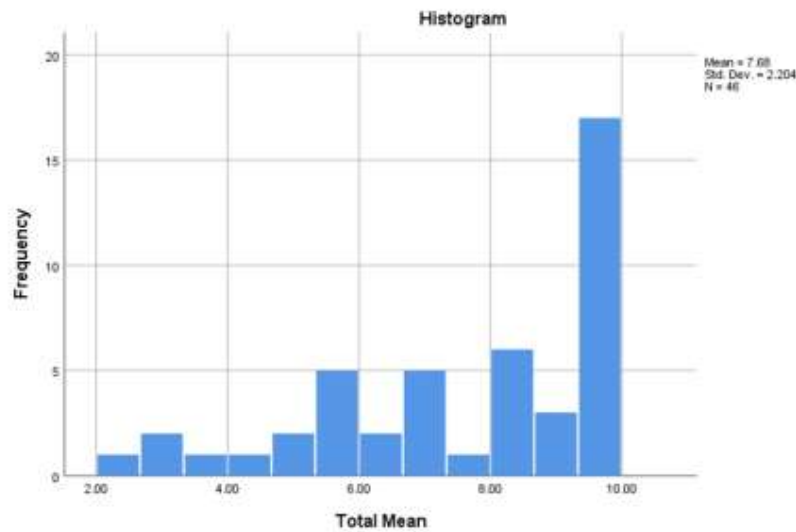
Concerning medication, coumadin use is no longer a practice in the management of heart failure because of the risks of GI bleeding, especially in this elderly population.

This practice is evident in the results of this study where the study reported none of the patients have received coumadin. Instead, they use of oral direct thrombin inhibitors such as apixaban. The use of beta-blockers and diuretics as a primary line of treatment is noted in our findings. Angiotensin-Converting Enzyme inhibitors (ACEI) and Angiotensin Receptor Blocker (ARB) came last as part of the treatment most likely because ACEI is not well tolerated among older adults because its side outcomes i.e., cough. Furthermore, studies are needed about ACEIs among elderly residents since meta-analysis showed that treatment with ACEIs and ARB's combinations showed better outcomes than the treatment with placebo reducing all-cause mortality, except ARB monotherapy and ARB plus ACEI (Burnett et al., 2017). This recommendation is important since we previously know that older adults with heart failure are underrepresented in large clinical trials (Díez-Villanueva & Alfonso, 2016).

2. What is the level of nurse-patient interaction after the implementation of NLI-HFTP among older adults in a SNF?

The test of normality using the Kolmogorov-Smirnov test showed a negatively skewed distribution (0.173; $p=0.001$). The mean scores of the level of nurse-patient interaction were negatively skewed towards the left (Figure 6). For skewed data, it is important to report the median. The NPI median is 8.4 (min=2.14; max=10). Based on the median score, the participants reported a high level of nurse-patient interaction based on a scale of 1-10. This finding is congruent with other studies about nurse-patient interaction showing high nurse-patient interaction (Flood, 2009; Haugan, Hanssen & Moksnes, 2012; Haugan, 2013; Haugan, Moksnes & Lohre, 2016).

Figure 6. Description of the study participants mean NPI scores distribution



An itemized description of the levels of nurse-patient interaction showing the means and standard deviation is reported in Table 11. The item-by-item questionnaire descriptively reported the mean scores which is between 7 to 8. This means a medium to a high level of NPI scores on a 1-10 scale. Q3, Q8, and Q4 were scored high among respondents. The participants reported that their interaction with the nurses makes them feel good. Nurses asking how they are doing made a difference in their reports of nurse-patient interaction. Lastly, respondents believe that their interaction with nurses is very important for them to thrive. In contrast, Q9 was the item that scored low (mean=7.00). Participants felt there is a need to improved nurses' listening ability to hear their concerns. As previously mentioned, older adults have limited perceptual and sensory abilities requiring nurses to be have patience and provide time for them to listen to their concerns. On average, the team spent about 15-20 minutes examining the resident and probing questions about the resident's needs. There may need to have more time spent for nurses to interact to listen specifically to their needs which can be more psychosocial.

Table 11. Itemized Description of the Levels of Nurse-Patient Interaction

Scale Item	N	Minimum	Maximum	Mean	Std. Deviation
NPIS1	46	3.00	10.00	7.6739	2.42262
NPIS2	46	1.00	10.00	7.2174	2.83559
NPIS3	46	4.00	10.00	8.0652	2.11242
NPIS4	46	1.00	10.00	7.6522	2.60100
NPIS5	46	1.00	10.00	7.8261	2.71870
NPIS6	46	1.00	10.00	7.2826	2.99379
NPIS7	46	1.00	10.00	7.7174	2.84927
NPIS8	46	2.00	10.00	8.3043	2.26931
NPIS10	46	1.00	10.00	7.8696	2.65505
NPIS9	46	1.00	10.00	7.0000	2.95146
NPIS11	46	1.00	10.00	7.7609	2.46923
NPIS12	46	1.00	10.00	7.5000	2.50111
NPIS13	46	1.00	10.00	7.5870	2.57834
NPIS14	46	3.00	10.00	8.1304	2.12507

The item-by-item standard deviation ranges from 2.1 to 2.9. Standard deviation measures how much the entire data set differs from the mean. The higher the standard deviation the more variability or spread the data have. Small standard deviations mean that most of the data is clustered around the mean. In this study, the standard deviation is around two which means that the variability is low. The scores are two standard deviations away from the mean which is seven. This means respondents rated their NPI level more or less about the same as the group average.

The findings are congruent with our theoretical assumptions that caring relationships are linked through the professional encounter of the nurse and patient. The study reported a high level of nurse-patient interaction between the patient and the heart failure team. This encounter can make a significant difference and contribution to the health outcomes of older adults with heart failure. Furthermore, this result provided evidence that a nurse-caring model in caring for older adults with heart failure can organize patient care delivery. This model demonstrated that healthcare team with collaborative framework is a way to engage and relate with other members of healthcare providers to provide the best care for the patient.

Because the data are negatively skewed and does not confirm the normal distribution. There is a need to transform the data and grouped them categorically to meet assumptions for the Chi-square test. Based on the data the NPI results were grouped into three-level: low, medium, and high level of nurse-patient interaction.

Table 12. Study Participants Levels of Nurse-Patient Interaction Sub-groups

Levels of Nurse-Patient Interaction	Frequency	Percentage
Low	16	35%
Medium	16	35%
High	14	30%
Total	46	100%

Table 12 reported that the NPI level does not differ significantly. Although the majority reported low to medium level of NPI. These results have to be interpreted carefully because when we categorized data much of the information is a loss in between. This sub-analysis is in contrast with our previous findings of high-level NPI. Altman (2006) provided an argument about the cost of dichotomizing the variables that categorizing leads to several problems such as loss of information, reduced statistical power to detect the relation between a variable and patient outcome and increase the risk of a positive result being a false positive. This is a study limitation that we need to consider given the low sample size and the negative distribution of the data.

With all these considered analyzing the strength and weaknesses of the data, the study reports a medium to a high level of NPI based on the median and item by item mean analysis of NPI scores.

2. What is the rehospitalization rate after the implementation of NLI-HFTP among older adults in a SNF?

The study participants who were enrolled in the NLI-HFTP reported a low number of 30-day rehospitalization (Table 4.7). The NLI-HFT program comparative analysis of

the re-hospitalization rate is shown in Table 14. The 3-month 30-day rehospitalization rate of the patients with heart failure before the study was 11.17% and after the program implementation, the 30-day rehospitalization rate was down to 4.9%.

Table 13. Study Participants 30-day Re-hospitalization

30 day-Rehospitalization	Frequency	Percentage
No	42	91%
Yes	4	9%
Total	46	100%

Table 14. Comparative Re-hospitalization Rate Pre-and-Post Program Implementation

Date Range	Month	Total Number of Patients Discharged	Number of CHF Patients Re-hospitalized <30days	30-days Rehospitalization Rate (%)	Mean
30 day	May	141	15	10.6%	11.17%
30 day	June	123	15	.2%	
30 day	July	121	13	10.7%	
Intervention	August				
30day	September	138	8	5.8%	4.9%
30 day	October	147	7	4.8%	
30 day	November	123	5	4.1%	

This study adds to the literature about how a specialized team that focuses on managing heart failure improves the outcome of older adults and most especially the residents in the SNF. Based on the result, there was a significant decrease in the 30-day rehospitalization rate among patients with heart failure in this facility after implementing the program. The 3-month average 30-day rehospitalization rate of the patients with heart failure before the study was 11.17% and after the program implementation, the 3-month average 30-day rehospitalization rate was down to 4.9%. To date, no documented literature evaluates a heart failure program in a SNF. Most of the studies about interdisciplinary approach care in heart failure were done in hospital

settings and have similar outcomes with this study in reducing heart failure exacerbation and ultimately rehospitalization (Hamner, 2005; Jaarsma, 2005; Martinen & Freundl, 2004; Sterne et al., 2014). Nonetheless, these results must be interpreted with caution and several limitations should be in mind. These findings should provide a platform for other studies to build on.

3. Is there a relationship among the variable’s demographic, clinical characteristics, nurse-patient interaction, and 30-day rehospitalization after the interdisciplinary heart failure team program among older adults in a SNF?

Hypothesis 4a: There is no association between the participant’s demographic characteristics and the level of nurses-patient interaction after the interdisciplinary heart failure team program among older adults in a SNF.

A Chi-square test of independence analysis examining the association was done to evaluate demographic characteristics and the levels of nurse-patient interaction. The results showed no significant association was found between sex, race, and ethnicity. A bivariate analysis using the Spearman correlation coefficient was used to examine the age and the levels of nurse-patient interaction. The results of this analysis ($r_s = -0.314$, $p = 0.034$) indicated that increasing age tends to report a lower level of nurse-patient interaction score. The strength of this relationship ($r_s^2 = 0.01$) was weak in that only 10% of the variance in the levels of nurse-patient interaction scores could be explained by age (Table 4.9).

Table 15. Correlations of Between Demographic Characteristics and Levels of NPI

Demographics (N=46)		Chi-square	Significance alpha=0.05
Sex	Male	0.621	0.733
	Female		
Race	White	4.761	0.313
	African American		
	Asian		
Ethnicity	Non-Hispanic	1.017	0.601

Hispanic

Age	Spearman's rho -0.314	0.034*
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Hypothesis 4b: There is no association between the participant's demographic characteristics and the 30-day rehospitalization after the interdisciplinary heart failure team program among older adults in a SNF.

A correlational analysis using chi-square tests of independence and point-biserial correlation was done to examine the association between demographic characteristics and 30-day rehospitalization. The results showed no significant association was found between sex, race, ethnicity, and age (Table 16).

Hypothesis 4c: There is no association between the clinical characteristics and 30-day re-hospitalization after the interdisciplinary heart failure team program among older adults in a SNF.

Table 16. Correlations of Demographic Characteristics and 30-day Re-hospitalization

Demographics (N=46)		Chi-square	Significance
Sex	Male	0.76	0.783
	Female		
Race	White	0.517	0.722
	African American		
	Asian		
Ethnicity	Non-Hispanic	0.325	0.569
	Hispanic		
		Point-Biserial Correlation	
Age		0.014	0.928

Tests of association using Chi-square tests of independence were done to evaluate the variables of clinical characteristics and 30-day rehospitalization. The results showed no significant relationship with the primary diagnoses, heart failure type, and the list of heart failure medications. However, chi-square analyses indicated a statistically significant and a very strong association between NYHA classification

and the 30-day rehospitalization variable ($\chi^2=11.63$, $p=0.003$, Cramér's $V=0.5$). Furthermore, the results showed that participants who were classified as Class II (50% within 30-rehospitalization) were more likely to be re-hospitalized because of heart failure exacerbation as compared to Class I (25% within 30-day rehospitalization) participants.

Patients with heart failure are divided into functional classes based on the New York Heart Association (NYHA) classification. NYHA class I–IV refers to the severity of symptoms, with class I patients being asymptomatic with ordinary activity and class II and III patients being symptomatic with ordinary or less than the ordinary activity, respectively. Heart failure subjects who develop symptoms at rest or with physical activity can be classified as class IV functional status. This symptomatic classification has been a major entry criterion for the clinical trials that support current heart failure treatment guidelines Papadimitriou (2019).

Table 17. Correlations Between Clinical Characteristics and 30-day Re-hospitalization

Clinical Characteristics		Chi-square	Significance
Primary Diagnoses	Systolic Heart Failure	2.310	0.511
	Diastolic Heart Failure		
	Combined Systolic and Diastolic Heart Failure		
	Heart Failure unspecified		
NYHA Classification	Class I Mild	11.628	0.003 *
	Class II Mild		
	Class III Moderate	<i>Cramér's V=0.503</i>	
Heart Failure Type	HFpEF	0.730	0.568
	HFrEF		
Medications	ACEI/ARBS	0.480	0.632
	Beta Blockers	0.603	0.587

Hydralazine/ISDN	0.552	0.440
Digoxin	0.097	1.000
Diuretics	0.185	1.000
Oral Direct	0.480	0.632
Thrombin Inhibitors		

This result is similar to the previous study that reported NYHA classification is predictive of hospitalization, quality of life, and mortality among patients with heart failure (Holland et al. 2010). Also, this study reported that participants who were classified as Class II (50% within 30-rehospitalization) were more likely to be re-hospitalized because of heart failure exacerbation as compared to Class I (25% within 30-day rehospitalization) participants. Earlier we discuss that NYHA is based on functional symptoms of patients with heart failure thus we can safely deduce that as NYHA classification becomes higher, the risk of heart failure exacerbation is higher, which subsequently increases the chances of rehospitalization. With this, healthcare providers need to be keen that simple assessments of function and symptoms easily performed at the bedside can predict short-term outcomes in heart failure patients.

Hypothesis 4d: There is no association between the level of nurses-patient interaction (low, medium, or high) and 30-day rehospitalization (yes or no) after the interdisciplinary heart failure team program among older adults in a SNF.

Table 18. Correlation Between Levels of Nurse-Patient Interaction and 30-day Re-hospitalization

	Chi-Square Tests	Significance
Levels of NPI and 30-day rehospitalization	0.792	0.673

Correlational analysis using Chi-square tests of independence was done. The results showed no significant association between the levels of nurse-patient interaction and 30-day rehospitalization. We early proposed that caring relationships influence the attainment of positive health outcomes for patients/families, health care

providers, and health care systems based on the Quality Caring Model. It is surprising to find no significant association between nurse-patient interaction and 30-day rehospitalization. The result is inconclusive to suggest that caring relationship does not improve health outcomes based on our study limitations.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Conclusion

It is well established that heart failure is one of the common reasons for rehospitalization among older adults in the community (Gruneir et al., 2018). However, the prevalence of heart failure in the SNF has not been very well described (Valle et al., 2005; Jurgens, 2015). In addition, there has been a gap in the literature about the evaluation of interventions to manage symptoms of heart failure. Nurses' role in the promotion, prevention, and management of heart failure is significant. This study investigated the outcome of an NLI-HFTP on the nurse-patient interaction and rehospitalization rate among older adults in a SNF.

Our results provided five main findings: description of the clinical characteristics of the older adults with heart failure in a SNF, a description of the levels of nurse-patient interaction, a comparative description pre-and-post program implementation on the 30-day re-hospitalization rate, and correlational analysis results of the outcome variables.

In this study, 46 participants were mostly young-old age approximately 65–74 elderly groups of African American, Non-Hispanic women. Clinical characteristics of older adults with heart failure in the SNF include a primary diagnosis of heart failure which was not unspecified (70%; n=32), Class I Mild symptoms NYHA classification (61%; n=28), and primary heart failure with reduced ejection fraction (46%; n=21). The associated comorbidities are hypertension (89%; n=41), coronary heart disease (72%; n=33), and arrhythmia (46%; n=21). Primarily line of treatment used includes beta-blockers and diuretics. The NPI median is 8.4. Based on the median score, the participants reported a high level of nurse-patient interaction based on a scale of 1-

10. The participants reported that their interaction with the nurses makes them feel good. Nurses asking how they are doing made a difference in their reports of nurse-patient interaction. Also, respondents believe that their interaction with nurses is very important for them to thrive. There was a significant decrease in the 30-day rehospitalization rate among patients with heart failure in this facility after implementing the program. Correlational analyses reported a significant and a very strong association between NYHA classification and the 30-day rehospitalization. Also, no significant association between nurse-patient interaction and 30-day rehospitalization was found in this study.

In conclusion, the findings are congruent with the theoretical assumptions based on the Quality Care Model that caring relationships are linked through a professional encounter of the nurse and patient. The study reported a high level of nurse-patient interaction between the patient and the heart failure team. This encounter can make a significant difference and contribution to the health outcomes of older adults with heart failure. Furthermore, this result provided evidence that a nurse-caring model can organize patient care delivery. Also, the study showed that teamwork and collaboration among healthcare providers is a way to engage and relate to provide the best care for the patient. Finally, this study demonstrated that the NLI-HFTP is a feasible intervention that can be implemented by skilled nursing facilities that can reduce the 30-day rehospitalization rate decreasing heart failure exacerbation incidence among the older adults in the SNF.

Recommendation

The CMS is the primary payer source of long-term care. The CMS recognized the increasing cost and burden of rehospitalization among older adults. There has been an increase in interest in the area of long-term care research to address the

costs and improve the quality of life among older adults. Thus, this area of research offers opportunities for grants and public funding, since there is still a scarcity of information. The recommendations are divided into clinical and research.

Clinical recommendations include increasing the number of skilled nursing facilities with heart failure program that targets older adults with heart failure; there must be increased collaboration between hospitals and facilities to communicate during discharge process about the needs of the patients and their follow-up to provide a smooth transition of care, during discharges there must be a collaboration between the skilled nursing facilities and home health care provides to ensure that older adults being discharged in the community received the appropriate care, in compliance with their medication regimen and follow-up with their primary care provider.

Research recommendations include strengthening the findings of the study by incorporating a robust experimental design with intervention and control group receiving a pre-and-post intervention to further evaluate the outcome, multiple site research to increase the number of sample size, exploring variables such as reports of quality of life among older adults and perceived quality of care among staffs involved in the care of the residents. The study welcome, as well as qualitative research among older adults describing their experience on this program, is worth knowing. Cost analysis research is highly recommended to provide support about the cost and benefit of the program. Further research is needed to test the care interaction and its health outcome to support the quality care model. All these studies can pave the way for developing evidence-based practice in the care of older adults with heart failure in skilled nursing facilities.

References

- Altman, D. G., & Royston, P. (2006). The cost of dichotomizing continuous variables. *BMJ (Clinical research ed.)*, 332(7549), 1080.
- American Heart Association. (2020). *Heart disease in African-American women*.
<https://www.heart.org/en/about-heart-disease-in-women/facts/heart-disease-in-african-american-women>.
- Baptiste, D., Mark, H., Groff-Paris, L. & Taylor L. (2014). A nurse-guided patient-centered heart failure education program. *Journal of Nursing Education and Practice*, 4(3), 49-57.
- Burnett, H., Earley, A., Voors, A. A., Senni, M., McMurray, J. J., Deschaseaux, C., & Cope, S. (2017). Thirty years of evidence on the efficacy of drug treatments for chronic heart failure with reduced ejection fraction: A network meta-analysis. *Circulation. Heart failure*, 10(1), e003529.
- Butts, J. & Rich, K. (2018). *Philosophies and Theories for Advanced Nursing Practice* (3rd ed). Jones and Bartlett.
- Butrous, H., & Hummel, S. L. (2016). Heart failure in older adults. *The Canadian Journal of Cardiology*, 32(9), 1140-7.
- Center for Disease Prevention and Control. (2019). *Heart failure fact sheet*.
https://www.cdc.gov/dhdsdp/data_statistics/fact_sheets/fs_heart_failure.htm
- Center for Medicare and Medicaid Services. (2017). *SNF re-hospitalization measure: All-cause risk-standardized re-hospitalization measure*.
<https://www.cms.gov/Medicare/Quality...Patient.../Technical-Report-Supplement.pdf>
- Cossette, S., Cara, C., Ricard, N., & Pepin, J. (2005). Assessing nurse-patient interactions from a caring perspective: Report of the development and preliminary psychometric testing of the Caring Nurse-Patient Interactions Scale. *International Journal of Nursing Studies*, 42(6), 673–686.
- Cossette, S., Pepin, J., Côté, J. K., & Poulin De Courval, F. (2008). The multidimensionality of caring: A confirmatory factor analysis of the Caring Nurse-Patient Interaction Short Scale. *Journal of Advanced Nursing*, 61(6), 699–710.
- Cossette S, Pepin J, Ricard N, & Côté J. (2005). A factorial-dimensional structure of the caring nurse-patient interaction-short scale (CNPI-short scale). *International Journal for Human Caring*, 9(2), 31.
- de Guzman, A., Imperial, J. A., Ilagan, D. M., Imus, H. A., Ignacio, K. M., & Ignacio, K. F. (2014). Utilizing conjoint analysis to explicate nurse-patient interaction among geriatric incarcerated individuals. *Educational Gerontology*, 40(12), 861–880.
- Deaton, C., & Benson, J. (2016). Time for correct diagnosis and categorization of heart failure in primary care. *The British Journal of General Practice*, 66(652), 554–555.

- Dharmarajan, K., Rich, M.W. (2017). Epidemiology, pathophysiology, and prognosis of heart failure in older adults. *Heart Failure Clinic*, 13(3), 417-426.
- Díez-Villanueva, P., & Alfonso, F. (2016). Heart failure in the elderly. *Journal of Geriatric Cardiology*, 13(2), 115-7.
- Dolansky, M. A., Capone, L., Leister, E., & Boxer, R. S. (2016). Targeting heart failure rehospitalizations in a SNF: A case report. *Heart & Lung*, 45(5), 392-396.
- Duffy, J. R. (2015). Joanne Duffy's quality-caring model. *Nursing Theories and Nursing Practice* (4th ed). F A Davis.
- Duffy, J. R., Baldwin, J., & Mastorovich, M. J. (2008). Using the quality-caring model to organize patient care delivery. *The Journal of Nursing Administration*, 37(12), 546-551.
- Fleischer, S., Berg, A., Zimmermann, M., Wüste, K., & Behrens, J. (2009). Nurse-patient interaction and communication: A systematic literature review. *Journal of Public Health* (09431853), 17(5), 339–353.
- Flood, L. S. (2009). Nurse-patient interactions related to diabetes foot care. *Medsurg Nursing*, 18(6), 361–368.
- Gilmour, J. (2013). Nurses and heart failure education in medical wards. *Nursing Praxis in New Zealand*, 29(3), 5–19
- Gruneir, A., Cigsar, C., Wang, X., Newman, A., Bronskill, S. E., Anderson, G. M., & Rochon, P. A. (2018). Repeat emergency department visits by nursing home residents: A cohort study using health administrative data. *BMC Geriatrics*, 18(1), 157.
- Hamner, J. B. (2005). State of the science: Posthospitalization nursing interventions in congestive heart failure. *Advances in Nursing Science*, 28(2), 175-190.
- Hanson, C., Aalfs, K., Plonczynski, D. (2013). Advanced practice nurse-managed heart failure clinic benefits the patient's quality of life and limits re-hospitalizations. *Nursing and Health*, 1(3), 47-51.
- Haugan, G. (2014). Nurse-patient interaction is a resource for hope, meaning in life, and self-transcendence in nursing home patients. *Scandinavian Journal of Caring Sciences*, 28(1), 74–88.
- Haugan, G., Hanssen, B., & Moksnes, U. K. (2013). Self-transcendence, nurse-patient interaction, and the outcome of multidimensional well-being in cognitively intact nursing home patients. *Scandinavian Journal of Caring Sciences*, 27(4), 882–893.
- Haugan, G., Moksnes, U. K., & Espnes, G. A. (2013). Nurse–patient interaction: A resource for hope in cognitively intact nursing home patients. *Journal of Holistic Nursing*, 31(3), 152–163.
- Haugan, G., Moksnes, U. K., & Løhre, A. (2016). Intrapersonal self-transcendence, meaning-in-life, and nurse-patient interaction: Powerful assets for quality of life in

- cognitively intact nursing-home patients. *Scandinavian Journal of Caring Sciences*, 30(4), 790–801.
- Haugan, G., Rannestad, T., Hanssen, B., & Espnes, G. A. (2012). Self-transcendence and nurse-patient interaction in cognitively intact nursing home patients. *Journal of Clinical Nursing*, 21(23–24), 3429–3441.
- Hirakawa, Y., Takenaka, N., Nishiyama, M., Bando, K., Sugane, H., Asaba, K., ... Doi, Y. (2017). Multifactorial etiology of heart failure in older adults. *Geriatrics & Gerontology International*, 17(9), 1328–1329.
- Holland, R., Rechel, B., Stepien, K., Harvey, I., & Brooksby, I. (2010). Patients' self-assessed functional status in heart failure by New York Heart Association class: A prognostic predictor of hospitalizations, quality of life, and death. *Journal of cardiac failure*, 16(2), 150–156.
- Holland, S. K., Evered, S. R., & Center, B. A. (2014). Long-term care benefits may reduce end-of-life medical care costs. *Population Health Management*, 17(6), 332–339.
- Jaarsma, T. (2005). An inter-professional team approach to the patient with heart failure. *Heart*, 91(6): 832–838.
- Jurgens et al. (2015). Heart failure management in skilled nursing facilities: A scientific statement from the American Heart Association and the Heart Failure Society of America. *Journal of Cardiac Failure*, 21(4), 263–299.
- Konick-McMahan J, Bixby B, & McKenna C. (2003). Heart failure in older adults: providing nursing care to improve outcomes. *Journal of Gerontological Nursing*, 29(12), 35–41.
- Lin, A., Cavendish, J., Boren, D., Ofstad, T., Seidensticker, D., Lin, A., & ... Seidensticker, D. (2008). A pilot study: Reports of benefits from a 6-month, interdisciplinary, shared medical appointment approach for heart failure patients. *Military Medicine*, 173(12), 1210–1213.
- Lindenfeld et al. (2010). Executive summary: HFSA 2010 comprehensive heart failure practice guideline. *Journal of Cardiac Failure*, 16(6): 480.
- Jessup, M., Abraham, W., Casey, D., Feldman, A., Francis, G., Gantias, T., et al. (2009). Focused update: ACCF/AHA guidelines for the diagnosis and management of heart failure in adults. *Circulation*, 119:1984–1985.
- Jurgens, C. Y., Shurpin, K. M., & Gomersell, K. A. (2010). Challenges and strategies for heart failure symptom management in older adults. *Journal of Gerontological Nursing*, 36(11), 24–33.
- Jurgens, C. Y., Goodlin, S., Dolansky, M., Ahmed, A., Fonarow, G. C., Boxer, R., ... Rich, M. W. (2015). Heart failure management in skilled nursing facilities: A scientific statement from the American Heart Association and the Heart Failure Society of America. *Circulation. Heart Failure*, 8(3), 655–687.

- Mahramus, T. L., Penoyer, D. A., Sole, M. L., Wilson, D., Chamberlain, L., & Warrington, W. (2013). Clinical nurse specialist assessment of nurses' knowledge of heart failure. *Clinical Nurse Specialist CNS*, 27(4), 198–204.
- Mozaffarian, D., Benjamin, E.J., Go, A.S., Arnett, D.K., Blaha, M.J., Cushman, M., ...Strokes Statistics Subcommittee. (2016). Heart disease and stroke statistics—2016 update: a report from the American Heart Association. *Journal of Circulation*. 133, e38-e360.
- Mcknight Long Term Care News. (2011). *Study: Elderly heart failure patients discharged to SNF face higher risks*. <https://www.mcknights.com/home/news/study-elderly-heart-failure-patients-discharged-to-nursing-homes-face-higher-risks/>
- Martinen, M., & Freundl, M. (2004). Managing congestive heart failure in long-term care: Development of an interdisciplinary protocol. *Journal of Gerontological Nursing*, 30(12), 5-12.
- Murad, K., Goff, D.C., Jr, Morgan, T.M., et al. (2015). Burden of comorbidities and functional and cognitive impairments in elderly patients at the initial diagnosis of heart failure and their impact on total mortality. *The Cardiovascular Health Study*. 3, 542–550.
- National Institute of Aging. (2017). *Definition of long-term care*. <https://www.nia.nih.gov/health/caregiving/long-term-care>
- Papadimitriou, L., Moore, C. K., Butler, J., & Long, R. C. (2019). The limitations of symptom-based heart failure management. *Cardiac Failure Review*, 5(2), 74–77.
- Parisi, L. L., Shea, L., & Noel, T. (2017). Quality assurance and performance improvement (QAPI) in healthcare for older adults: Heart failure. *Try This: Best Practices in Nursing Care to Older Adults*, 1–2.
- Peplau, H. (1991). *Interpersonal Relations in Nursing: A conceptual frame of reference for psychodynamic nursing*. Springer Publishing Company.
- Polit, D. F., & Beck, C. T. (2014). *Essentials of nursing research: Appraising evidence for nursing practice* (8th ed.). Lippincott Williams & Wilkins.
- Rorer B, Tucker CM, & Blake H. (1988). Long-term nurse-patient interactions: Factors in patient compliance or noncompliance to the dietary regimen. *Health Psychology*, 7(1), 35–46.
- Schilling, I., & Gerhardus, A. (2017). Methods for involving older people in health research-A review of the literature. *International Journal of Environmental Research and Public Health*, 14(12), 1476.
- Schwarz, K. A., Mion, L.C., Hudock, D., & Litman, G. (2008). Telemonitoring of heart failure patients and their caregivers: A pilot randomized controlled trial. *Progress in Cardiovascular Nursing*, 23(1), 18–26.
- Sterne, P. P., Grossman, S., Migliardi, J. S., & Swallow, A. D. (2014). Nurses' knowledge of heart failure: Implications for decreasing 30-day re-hospitalization rates. *MEDSURG Nursing*, 23(5), 321–329.

- Strait, J. B., & Lakatta, E. G. (2012). Aging-associated cardiovascular changes and their relationship to heart failure. *Heart Failure Clinics*, 8(1), 143–164.
- Valle, R., Aspromonte, N., Barro, S., Canali, C., Carbonieri, E., Ceci, V., & ... Milani, L. (2005). The NT-proBNP assay identifies very elderly nursing home residents suffering from pre-clinical heart failure. *European Journal of Heart Failure*, 7(4), 542-551.
- van Riet EES, Hoes AW, Wagenaar KP, Limburg A, Landman MAJ, Rutten FH. Epidemiology of heart failure: the prevalence of heart failure and ventricular dysfunction in older adults over time. A systematic review. *European Journal of Heart Failure*. 2016;18(3):242-252.

Appendix A
NURSE-PATIENT INTERACTION SCALE

Directions: Encircle the best response that you would describe your experience with the nurses. The NPIS is based on a 10-point scale ranging from 1 (not at all) to 10 (very much).

1. Having confidence and trust in the nurses.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

2. The nurses take me seriously.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

3. Interaction with the nurses makes me feel good.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

4. The nurses understand me.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

5. The nurses make all possible effort to relieve my plagues.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

6. The nurses involve me in decisions regarding my daily life.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

7. The nurses treat me with respect.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

8. The nurses ask me how I am.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

9. The nurses are listening interestingly to me.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

10. I often get hurt or sad from how the nurses interact.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

11. Interaction with the nurses contributes to meaning in my life

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

12. The nurses pay attention to me as a person.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

13. I am satisfied with the communication with the nurses.

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

14. Interaction with nurses is the most important to my thriving

(Not at all) 1 2 3 4 5 6 7 8 9 10 (very much)

Demographics

Name: _____

Age: _____

Sex assigned at birth: () Male () Female

Race: () White () African American () Asian American () Native American

Ethnicity: () Hispanic () Non-Hispanic

Records of Clinical Data

ID No. _____

Primary Diagnosis: _____

Comorbidities:

Number of re-hospitalizations in 30 days for Heart Failure Exacerbation:

NYHA Classification if indicated

- ☐ Class I Mild: no symptoms, no limits on activity
- ☐ Class II Mild: Mild symptoms, slight limitations, SOB with ordinary activity
- ☐ Class III Moderate: Marked symptoms
- ☐ Class IV Severe: Severe symptoms and limitations, SOB at rest
- ☐ Not found in record

Heart Failure Type: ☐ HFpEF (>50%) ☐ HFrEF (EF<45%) ☐ Systolic Dysfunction

Current Heart Failure Medications:

ACEI/ARBs: ☐ YES ☐ NO

If no state why: if known ☐ EF >40% ☐ Hyper K ☐ Hypotension ☐ Other Allergic to

Beta Blockers: ☐ YES ☐ NO

If no state why: ☐ EF >40% ☐ Bradycardia ☐ Hypotension

Hydralazine/ISDN: ☐ YES ☐ NO

Digoxin: ☐ YES ☐ NO

Diuretics: ☐ YES ☐ NO

Warfarin: ☐ YES ☐ NO

Oral Direct Thrombin Inhibitors: ☐ YES ☐ NO

Appendix B

Information Package and Informed Consent “Outcomes of NLI-HFTPto Nurse-Patient Interaction and Rehospitalization Rates Among Older Adults in a SNF”



Informed Consent

University of the Philippines Open University

This informed consent form is for patients admitted in The Riverside Premiere and Rehabilitation Center and who I am inviting to participate in my research entitled “Outcomes of NLI-HFTPto Nurse-Patient Interaction and Rehospitalization Rates Among Older Adults in a SNF”

Name of Principle Investigator: Amil Tan BSN, RN

Name of Organization: University of the Philippines Open University

Name of Project: Thesis N300

This Informed Consent Form has two parts:

- Information Sheet (to share information about the study with you)
- Certificate of Consent (for signatures if you choose to participate)

Part I: Information Sheet

Introduction

I am Amil Tan, taking Master's Degree in Nursing. I am doing research about the outcomes of NLI-HFTPto nurse-patient interaction and rehospitalization rates among older adults in a SNF. I am going to give you information and I would like to invite you to be part of my research. Before you decide, you can talk to anyone you feel comfortable with about the research. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the research

This research is aims to evaluate the outcomes of a NLI-HFTPon the nurse-patient interaction and rehospitalization rate among older adults in a SNF, thereby improving our nursing services to you.

Type of Research Intervention

This research will involve your participation in being a recipient of the care provided by the heart failure team. The NLI-HFTP in the Riverside Rehabilitation and Premiere Center is new innovative program developed by nurses as a quality

improvement project. The purpose of this intervention is to improve the care of older adults with heart failure in the SNF by preventing rehospitalization and managing symptoms. You will be enrolled as participant of this program. You will be visited by interdisciplinary team such as registered nurse, nurse practitioner, dietitian, social worker and a cardiologist. The team will conduct a weekly visit on you to evaluate your heart failure status and provide recommendation. The team will obtain information about symptoms associated with heart failure, conduct medical evaluation, provides education about heart failure, compliance with medication, diet and fluid restrictions and make necessary recommendation. The researcher initially will obtain baseline information about your demographics and heart failure status. You will then be followed by the researcher for the next four weeks. The researcher will then obtain measurement about your perception of nurse-patient interaction and the outcome of 30-day rehospitalization.

Participant Selection

You are being invited to take part of this research because you are qualified respondent based on inclusion and exclusion criteria of this study who can contribute much to our understanding and knowledge about the outcomes of this intervention in your perception of nurse-patient interaction and the rehospitalization outcome.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate all the services you receive at this facility will continue and nothing will change.

Procedures

We are asking you to help me learn about the to evaluate the outcomes of a NLI-HFTPon the nurse-patient interaction and rehospitalization rate among older adults in a SNF. I am inviting you to take part in this research project. If you accept, you will participate in the study. The nurse manager will give both oral and written information to you about your rights as participants and their right to withdraw from the study at any time. You will be given a research package. The first part will include the participant information sheet, which will contain the description of the study and purpose, the researcher and advisor contact number, and a statement that ensure confidentiality of all the information obtained during the study process. The second part will contain the consent to participate in the study which will be signed by the participant and researcher who obtained the consent. The third part is the

questionnaire about nurse patient interaction. The last part will be the demographic information of the participants. You will be provided thirty minutes to complete the survey. At the end of the given time, the nurse manager will personally collect the questionnaire. Questionnaires will be checked for completeness and accuracy before placing in the secured envelope. The completed forms will be scanned to make an electronic copy file that will be sent to the primary researcher. The hard-copied documents will be locked in a file cabinet, to which only the primary researcher and the research advisor will have access. The completed forms will be saved for five years from the collection date and will be discarded by the researcher using the paper shredder. The electronic copies of the survey will be deleted.

Duration

The survey will take 15 minutes. This will take place in the facility inside your room. You may ask questions as you wish.

Benefits

This study will benefit the older adults with heart failure by improving their health status. If you participate in this research, you will have the following benefits: your medical condition specifically heart failure status will be monitored on a weekly basis. There may not be any benefit for you directly but your participation is likely to help us find the answer to the research question. There may not be any benefit to the society at this stage of the research, but future generations are likely to benefit.

Confidentiality

Federal law protects your rights to privacy concerning Protected Health Information (PHI). There are certain things you need to know. As part of this study, we will collect selected PHI such as your name, date of admission and health conditions. The research being done may draw attention but we will not be sharing information about you to anyone outside of the research team. The information that we collect from this research project will be kept private. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will seal that information. It will not be shared with or given to anyone except the researcher who will have an access to the information.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so, and choose to withdraw your participation. You can do so at any time period. It is your choice and all of your rights will still be respected. Non-participating will not affect health care

delivery service provided to you by the facility. You will continue to receive the NLI-HFTP visits weekly.

Protection from Harm

There is minimal risk associated with the study. However, if there are any unintended psychological problems that may arise from participating in this research. A referral to the in-house psychologist and psychiatrist will be provided to the participants.

Access to Research Records

During the course of this study, you will have access to your protected health information, research record and any study information that is part of that record.

Contact Information for Questions or Problems

When you have read this information, Amil Kusain Tan Jr. will discuss with you and answer any questions you may have. If you have questions at any time, please feel free to contact him at amilkusainjr.tan@yahoo.com. You may also contact his supervisor to discuss about this study. Contact: Araceli Balabagno, RN, MAN
Email: araceli.balabagno@upou.edu.ph

Part II: Certificate of Consent

I have been invited to participate in research about Outcomes of NLI-HFTP to Nurse-Patient Interaction and Rehospitalization Rates Among Older Adults in a SNF.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant: _____

Signature of Participant: _____

Date: _____

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done: (1) Participation in the Survey of their perception of nurse-patient interaction with the heart failure team.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly

and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of Researcher /person taking the consent: _____

Date: _____

Appendix C

PERMISSION TO USE STANDARDIZED TOOL

NPIS Request Form

Amil Kusain Tan Jr., requests permission to copy the Nurse-Patient Interaction Scale (NPIS) for use in my research (Master's Thesis) titled, **Outcomes of NLI-HFTPto Nurse-Patient Interaction and Rehospitalization Rates Among Older Adults in a SNF.**

In exchange for this permission, I agree to submit to Dr. Haugan Items 1 and 2 below, and 3 if available:

1. An abstract or copy of my study purpose and findings, description of the sample, the range of NPIS scores and the mean NPIS score in my group of participants, and correlations between the NPIS scale scores and other measures used in my study. (This will be used by Dr. Haugan to assess construct validity).
2. The reliability coefficient as computed on the scale from my sample (Cronbach's alpha). Any other information or findings that could be helpful in assessing the reliability or validity of the instrument would be greatly appreciated (e.g. problems with items, comments from participants, other findings).

These data will be used to establish a normative data base for clinical populations. No other use will be made of the data submitted. Credit will be given to me in reports of normative statistics that make use of the data I submitted for pooled analyses.

Date: August 10, 2019

Name: Amil Kusain Tan Jr.

Position: Master of Arts in Nursing Student

Mailing address: 335 East Apt 8 94th Street, New York, NY 10128

Email address: amilkusainjr.tan@yahoo.com

Permission is hereby granted to copy the NPIS for use in the research described above.

Gørill Haugan, PhD, RN, Associate Professon

Date: August 10, 2018

Re: NPIS Request Form

From: Gørill Haugan (gorill.haugan@ntnu.no)
To: amilkusainjr.tan@yahoo.com
Date: Saturday, August 10, 2019, 11:38 PM EDT

Dear Amil Kusain,

Thank you for your e-mail and the request form.

I wish you the best of luck with your study, and look forward to learn about your results and experiences with the NPIS scale.

Best regards,
Gørill

Gørill Haugan
Professor, PhD, RN
NTNU Norwegian University of Technology and Science
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Appendix D
ETHICS APPROVAL LETTER



UNIVERSITY OF THE PHILIPPINES
OPEN UNIVERSITY

Office of the Vice Chancellor for Academic Affairs

15 August 2019

ASST. PROF. QUEENIE RIDULME
Program Chair
Master of Arts in Nursing
Faculty of Management and Development Studies
UP Open University
Los Baños, Laguna

Dear Asst. Prof. Ridulme:

The UPOU Research and Publications Committee as per the endorsement of Ms. Maria Cecilia E. Punzalan and Dr. Josephine Agapito who served as Ethical Reviewers for the thesis proposal of one UPOU Master of Arts in Nursing student whose name is indicated below is recommending the following action:

Amil Kusain Tan Jr.: "Effects of Nurse-Led Interdisciplinary Heart Failure Team Program to Nurse-Patient Interaction and Rehospitalization Rates among Older Adults in a Skilled Nursing Facility"

ACTION: Passed the ethical review and can proceed with her research but have to revise according to the comments made by the reviewers

May we request you to disseminate the said information to the concerned student.

Thank you.

Truly yours,

MELINDA F. LUMANTA
Vice Chancellor and
Chair, Research and Publications Committee

Appendix E

CURRICULUM VITAE

AMIL KUSAIN P. TAN JR. BSN, RN

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Mobile:

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Education

Bachelor of Science in Nursing 2003 - 2007

Xavier University, Ateneo de Cagayan, Philippines

Relevant Management Experiences

The Riverside Premier Rehabilitation and Healing Center, New York, USA

Assistant Director of Nursing (Sep 2018-present)

I assist the Director of Nursing (DON) in planning, organizing, developing, and directing the overall operation of the Nursing Services department to ensure the highest degree of quality patient care in accordance with all applicable NYS-DOH laws, regulations, nursing practice standards. I supervise two sub-acute floors, one dementia floor, and one long-term floor.

Infection Control Preventionist (Sep 2018-present)

I oversee the operations of infection prevention, epidemiology, surveillance, immunization, outbreak and safety programs. I am accountable for the surveillance of healthcare-acquired and community-acquired infections. I do monthly tracking of antibiotics, hand hygiene compliance, perform audits, conduct environmental rounds. I completed and received a certificate from the *CDC Train* program for infection control preventionist. Currently, I am supervising infection control program in our new dialysis unit.

Intensive Support Service Coordinator (Dec 2018-present)

I provide support to the critical care patients who are at risk for re-hospitalization. I coordinate the care and serves as a liaison for the team to coordinate care and facilitate clinical protocols for the very sick residents. The critical cases we provide support are sepsis, heart failure, and COPD exacerbation. We provide services such as Telemedicine, iSTAT, and AirVo, CPAP, and BiPAP. The ultimate goal of the program is to prevent 30-day rehospitalization. I also coordinate services involving respiratory patients with tracheostomy, nebulization and requiring incentive spirometer.

Sub-acute care Nurse Manager (Sep 2016-Aug 2018)

I report to the Assistant Director of Nursing. Subacute care for patients who have skilled care needs after an acute illness or hospitalization. Care could be rendered in a rehabilitation or skilled nursing facility. I am responsible for caring for medical and surgical patients. I provide assessment skills, and skill in the care of patients on intravenous therapy, ventilator, or tracheostomy. I oversee licensed practical nurses and certified nursing assistants. I assist in solving staffing difficulties when they arise. I have the ability to work in a dynamic unit where patient admission and discharges are high.

Long-term care floor Nurse Manager (Apr 2016- Sep 2016)

I report to the Assistant Director of Nursing. I am responsible for caring for elderly residents and patients who require extended medical care. I oversee the licensed practical nurses and certified nursing assistants. I am responsible for assuring the Resident Care Plan is initiated and revised as necessary to reflect the current needs of the resident. I participate with Nursing Administration in meeting clinical goals. I evaluate staff assigned to her/his assigned unit to determine staff competencies and/or the need for education.

Relevant Quality Assurance and Quality Improvement Experiences

The Riverside Premier Rehabilitation and Healing Center, New York, USA

Infection Control Committee QA/QI member (Sep 2018 – present)

I worked with the infectious disease specialist, medical director, and director of nursing to plan and implement quality assurance and quality improvement initiatives in the facility. We did QA on improving hand hygiene and wound care practices among staff. I participated in the outbreak management of influenza, invasive Group A Streptococcus, Legionella, Norovirus, and Candida Auris.

Heart Failure Program Initiative, consultant (Aug 2018- present)

I participated in the initiative to reduce heart failure exacerbation and rehospitalization. I provide expert advice and serves as a peer reviewer for heart failure clinical protocol. I drafted the CHF assessment intake form. Currently, I am tasked to evaluate the patient outcomes of the program.

Nursing Department QA/QI member (Sep 2018-present)

I assist with the Director of Nursing in planning and implementation of quality care programs such as reducing fall initiative, psychotropic medication, reviewing medication errors and pharmacy quality issues, reducing 9 or more medications,

dementia and behavioral management, weight loss initiative, pest control, and assists with education initiatives.

Ministry of Interior Security Hospital, Riyadh, Kingdom of Saudi Arabia

Infection Control Nurse (Dec 2010-Aug 2012)

I reported to the Infection Control Director. I participated in the pioneering of the hospital infection control program and activities. I used to collect, collate, review, and analyze nosocomial infections in the hospital. I used to conduct and assists with an in-service training program related to infection control. I participated in the WHO hand hygiene campaign in the hospital. I participated in the formulation of infection control policies and procedures. I helped supervise the compliance of nurses with regard to infection control. I was an active member and spearheaded the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) accreditation committee for infection control.

Relevant Clinical Nursing Experiences

Horizon Healthcare Staffing, Hicksville, New York, USA (Apr 2016- Mar 2017)

I worked as an agency RN School Nurse per diem. I provided various school health services such as running school office clinics; 1:1 case with special needs students; and transportation cases across public health schools in 5 Boroughs of New York.

Ministry of Interior Security Hospital, Kingdom of Saudi Arabia (2010-2011)

I worked as a registered nurse providing care for acutely ill patients. I report to the head nurse of the unit. I was assigned in various units such as the intensive care unit and medical-surgical ward.

Pagadian City Medical Center, Pagadian City, Philippines (2009 -2010)

I worked as a registered nurse caring for acute care patients. I was assigned to the emergency room and trauma unit. I was also assigned as the surveillance coordinator of the Philippine Integrated Disease Surveillance and Response (PIDSR) program. I was also the nurse responsible for running Animal Bite Clinics and Treatment Centers by providing immunization and treatment to patient who sustained bite injury from animals.

Tukuran Rural Community Health Center, Tukuran, Philippines (2007-2008)

I worked as a community health nurse together with the public health nurse, registered midwives, and health workers in delivering the Maternal and Child Health program. The program includes prenatal and postnatal care for mother and child. I

deliver or assist with normal deliveries at home and health centers. I provide basic immunization from children (0-12 months)

Memberships in Professional or Research Societies

2018 – present Sigma Theta Tau International Honor Society of Nursing, Alpha Phi Chapter, Member

2018 – present New York Academy of Medicine, Nursing Section, Associate Member

2013 – 2014 Infusion Nurses Society, Member

Past memberships

Member Infusion Nurses Society, USA (2013)

Member Philippine Nurses Association (2007)

Member Renal Nurse Association of the Philippines (2008)

Member Association of Nursing Service Administrator of the Philippines (2008)

Computer Literacy

Electronic Health Record: HMS-Inpatient (Hospital Management System), Sigma Care and Point Click Care.

Statistical Analysis: SPSS 18.0, SAS, Covidence, and Atlas Ti, CAPI (Computer Assisted Personal Interviewing)

Microsoft Word, Excel, PowerPoint

Training and Seminars

Infection Prevention and Control

- CDC Train for Infection Control Preventionist (2019)
- Philippine Integrated Diseases Surveillance and Response (2009)

Acute and Critical Care

- Airway Management with Emphasis on Difficult Intubation, Santarem, Portugal (2012)

- European Resuscitation Council Advanced Cardiac Life Support, Faro, Portugal (2012)
- European Resuscitation Council Pediatric Advance Life Support, Faro, Portugal (2012)
- Saudi Heart Association Certification for Basic Life Support—Provider (BLS) (2010)
- American Heart Association Certification for Advance Cardiac Life Support (2010)
- Intravenous Nurse Certification Program – Philippines (2008)
- Renal Nurse Course on peritoneal dialysis, hemodialysis & care of the vascular access (2008)