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Program Evaluation of a Home-Based Primary Care Practice and Patients with Heart Failure

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This is to certify that the doctoral study by

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Walden University
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Abstract

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by

Anne Walsh

MS, Stony Brook University, 2011

BS, Kaplan University, 2007

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Heart failure (HF) affects over 5.5 million adults in the United States with a prevalence of 10%–20% in older adults and accounts for 3% of all hospital admissions with a readmission rate as high as 25% within 1 month of discharge. Patients with HF account for approximately 42% of the doctor of nursing practice project site's patient population, and the health system has a 30-day readmission rate of 35% for patients with HF in 2 large hospitals. Thus, the health system loses almost $13 million per year in Medicare penalties. This retrospective quality improvement project reviewed the effectiveness of care for HF patients, as measured by quality-adjusted life years (QALY) in a home-based primary care (HBPC) practice over 3 years guided by a health economics framework, using cost-benefit (CBA) and cost-utility (CUA) analyses. Sources of evidence that were used to address the practice-focused question included patient frailty score, years since HF diagnosis, patient days of hospital admission and readmission, use of the emergency department (ED), and patient satisfaction results. The CBA of patients (N = 119) revealed a 46% decrease in inpatient days after enrollment in HBPC. Hospital admissions decreased by 49% and readmissions decreased 40%. The estimated overall total cost savings was 48% or $434,752 ($N$ = 119, M = $35,897.85). ED encounters decreased 28% (N = 119, M = $557.97). An overall increase in QALY from start of care (N = 119, M = .96) to 2019 (N = 119, M = 3.23) demonstrated the effectiveness of HBPC on increasing quality of life (QOL) for home bound HF patients. By providing HBPC, elder patients can maintain their self-worth and dignity that is often lost in a long-term care facility and improve their QOL, in turn promoting positive social change.

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Dedication

This entire project is dedicated to my mother as she is the reason, I pursued nursing as a career path. I know she would be proud in seeing all that I have accomplished.

Acknowledgments

I want to acknowledge my boyfriend, my family and friends who have supported me through this educational journey. Your encouragement has been incredible, and often needed when I was ready to give up.

I would also like to acknowledge my HBPC leadership and colleagues for the support given to me while obtaining this degree. I would like to express thank you to Dr. Jennifer Laffey, Dr. Sheila Davies, and Dr Cristie Geddes for answering all my questions. A special thank you to Dr Barbara Niedz for the immeasurable support and guidance throughout this project.

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Section 1: Nature of the Project

Introduction

The Centers for Disease Control and Prevention (CDC) estimated that 5.7 million adults in the United States suffer from heart failure (HF), with a prevalence of 10%–20% in older adults (Uchmanowicz, Wleklik & Gobbens, 2015). The yearly expenditures for HF are estimated at $30.7 billion, which includes the overall cost of care, treatments, and missed days of work (CDC, 2019).

In the United States, 3% of all hospital admissions are related to the diagnosis of HF, with the readmission rate being as high as 25% within 1 month of discharge (Cowie et al., 2014). The Hospital Readmission Reduction Program (HRRP) is a component of the Affordable Care Act (ACA) that permits the Centers for Medicare and Medicaid Services (CMS) to decrease compensation to hospitals with excessive rates of readmissions for patients with fee for service (FFS) Medicare plans. HF is one of six conditions included in the HRRP. Feltner et al. (2014) have illustrated that comprehensive home-based programs, with recurring visits to patients at home beginning within 1 day of discharge, reduce hospital readmissions for patients with HF within 30 days and over 3 to 6 months.

Individuals with HF are at increased risk for frailty syndrome. In the United States there are approximately 4 million homebound, frail, and/or aging individuals who can no longer leave their homes to visit their primary care provider (PCP; Ritchie & Leff, 2018). In a systematic review by Stall, Nowaszynki, and Sinha (2014), home-based primary care (HBPC) programs lead to a significant decrease in emergency room (ER) visits,

hospitalizations, subacute rehabilitation and, nursing home admissions for all patients. Vanleerberghe, De Witte, Claes, Schalock, and Verté. (2017) illustrated that individuals at the end of their life prefer to be in their own home with family and friends providing care.

There is an increased need for nursing care and education on care of the frail elder with the growth of the geriatric population in the United States. Walden University's mission of promoting social change discusses actions to promote the worth, dignity, and development of individuals. Therefore, by providing 24-hour access to care for frail elder patients with HF through HBPC it is anticipated that ER visits and hospital admissions will be decreased. Health systems will not be penalized for readmissions and patients can remain in their own households, with their own perception of improvement in quality of life (QOL). This project was a retrospective quality improvement (QI) project, a program evaluation, which reviewed the effectiveness of care of HF patients in a HBPC practice over time.

Problem Statement

I am a nurse practitioner (NP) in a HBPC practice, which is part of a large health system, located in a suburban area on the east coast of the United States. This HBPC practice was the doctor of nursing practice (DNP) project site and is involved in the Medicare Independence at Home (IAH) demonstration. IAH delivers HBPC to chronically ill FFS Medicare patients with multiple comorbidities and difficulties in performing normal activities of daily living (ADL; Rotenberg, Kinosian, Boling, & Taler, 2018). Goals of IAH include decreasing hospital admissions and readmissions for

homebound individuals (Rotenberg et al., 2018). Participants in the IAH demonstration are accountable for all medical care and assume the financial risk involved with caring for this home bound population.

A hospital readmission occurs when a Medicare patient is readmitted to any hospital within 1 month of initial discharge. Medicare uses an inclusive definition of readmission, meaning that any hospital admission that occurs within 1 month of initial discharge is considered a readmission (CMS, 2018). Facilities with readmission percentages that exceed the United States average are fined with reductions in Medicare payments for all admissions (Boccuti & Casillas, 2017). In the United States, 3% of all hospital admissions are related to the diagnosis of HF, with the readmission rate being as high as 25% within 1 month of discharge (Cowie et al., 2014). The HRRP permits CMS to decrease compensation to hospitals with excessive rates of readmissions for patients with FFS Medicare plans (CMS, 2018). HF is one of six conditions included in the HRRP (CMS, 2018). Patients with HF account for approximately 42% of the DNP project site's patient population and the health system, in which the HBPC practice is embedded, has a 30-day readmission rate of 35% for patients with HF in two of the system's largest hospitals (Medicare.gov, n.d.). As a result, the health system loses approximately $13 million per year in overall Medicare penalties.

Because of the growth of the geriatric population in the United States, there is an increased need for nursing care and primary care for the homebound, frail elders (Zimmer & Yang, 2018) Advanced practice nurses have an obligation to develop programs that meet the needs of these patients. Providing care through a home-based program is not

only cost effective, it is the right thing to do for patients. Smith, Pan, and Novelli (2016) revealed that a single NP visit to a patient in their home after hospital discharge reduced readmissions by over 48%. Currently only two NPs, including this author, who work in this HBPC practice provide primary care to approximately 380 of the practice's 1,400 patients.

Criteria for admission to the practice requires primarily that the patient be homebound. The NPs in this HBPC practice are responsible for the total care of their patients through regularly scheduled visits. Of the 1,400 patients in the practice, 300 are in the IAH demonstration project. Regardless, all 1,400 patients are managed similarly in the way in which they are followed by the NP staff at home. At the start of the DNP project, there were an additional 166 patients on a waiting list who were eligible for home-based care, but limitations of the two NPs precluded their addition to the practice. Thus, the problem that the DNP project addressed had several components: (a) there is a high incidence of 30-day readmissions among the homebound elders served by the DNP site, (b) there was a waiting list of 166 patients who are not presently being served by the HBPC, (c) there is a need for more health care providers in the HBPC practice. and (d) the cost of care for these elders HF patients is significant.

Purpose Statement

Vanleerberghe et al. (2017) illustrated that older individuals prefer to live their lives in their own home with family and friends providing care. In the United States it is estimated that 1 million to 3.6 million individuals over the age of 65 are permanently homebound. These homebound individuals cannot visit their PCP and often turn to the

emergency department with subsequent hospitalizations when they fall ill. Hospitalizations for the homebound can be detrimental causing functional decline, loss of the ability to remain home and increased risk of admission to nursing homes (Stall et al., 2014). A leading health indicator (LHI) of Healthy People 2020 is access to health services (U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion [HHS ODPHP], 2010). Health promotion and maintenance is necessary to prevent and control chronic conditions. Therefore, exceptional health care is essential to attain health equity for all citizens of the United States (HHS ODPHP, 2010). Yet, a gap in practice exists as there are approximately 4 million homebound, frail, aging individuals across the country who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018).Less than 12% of homebound Americans receive any medical care in their homes (Klein, Hostetter, & McCarthy, 2017). At the start of this project, the DNP project site had a waiting list of 166 potential patients and often must refer potential patients to other house call providers who are not affiliated with the health system.

One of the largest obstacles in the development and spread of HBPC is that the financial reimbursements from most medical plans do not fund such an enterprise. Providers who rely on CMS compensation alone do not have the revenue to maintain a practice (Klein et al., 2017). Medicare pays a practice from $22 to $148 for level of evaluation and management (E/M) performed per visit. (CMS, 2019a). This does not compensate a practice for time required for transportation between patients. Some successful HBPC practices rely on philanthropy but this might not be available in all areas.

The DNP project was a retrospective QI program evaluation which determined that the HBPC program should be expanded to eliminate the waiting list. A cost-utility analysis (CUA), which measures quality and length of life as the primary outcome of interest (McFarland, 2014) was used as part of the QI program evaluation, and determined that home-based program resulted in improved quality-adjusted life-years (QALY). A cost-benefit analysis (CBA), which compares costs was used to analyze admissions, readmissions, and ED visits (Shiell, Donaldson, Mitton, & Currie, 2002). These analyses were used to evaluate the effectiveness and costs and to address the waiting list and determined the cost effectiveness of hiring another nurse practitioner to decrease the current waiting list and to provide care for more homebound, elder patients.

Practice-Focused Question

The purpose of this DNP project was to establish the impact of home-based primary care in decreasing the cost of care, while improving QOL and QALY for patients with HF. In alignment with the Institute for Health Improvement (IHI) Triple Aim Initiative, Medicare has begun a transition to value-based care that pays providers and practices for quality care not quantity of care they give patients. The Triple Aim Initiative and value-based care both support a triple goal of improved healthcare for individuals, improved population health and decreased expenditures (CMS, 2018; Stiefel & Nolan, 2012). The HRRP was one of five original value-based programs, with HF being one of six conditions included in the program. Feltner et al. (2014) have illustrated that comprehensive home-based programs, with recurring visits to patients at home beginning

within 1 day of discharge, reduce hospital readmissions for patients with HF within 30 days and over 3-6 months.

Individuals diagnosed with HF are at increased risk for frailty syndrome. A gap in practice exists in the United States as there are approximately 4 million homebound, frail, aging individuals who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018). At the start of this project, the DNP project site had a waiting list of 166 potential patients who did not have access to primary care in their homes. Thus, the practice-focused question that framed this DNP project was: In patients with HF, does home-based primary care positively affect patient outcomes as measured by QOL and QALY and reduce the cost of care, as measured by reduced admissions, 30 day readmissions and ER visits?

Nature of the Doctoral Project

This project was a retrospective QI program evaluation using a health economics approach, to review effectiveness of a HBPC practice over time. Hospital admissions, readmissions and ER visits were reviewed for FFS Medicare patients with HF and compared to the same experiences of HF patients in the HBPC program. The years 2017 to 2019 were reviewed and it was determined that participation in the IAH demonstration project facilitated the goal of reduced hospitalizations and ER visits, consequently lowering Medicare expenditures. It was also determined that the initial gains when the program was first established were held, with a continuing downward trend in resource use. Patient satisfaction surveys were reviewed and determined there was an impact on QOL for patients with HF**,** (an item on the present patient experience survey). An

evaluation of QALY between 2017 and 2019 was made by estimating the number of years since diagnosis with HF, functional status, as measured by the ADL component of the CMS frailty score, and years enrolled in HBPC. Patient and caregiver perception of the practice was determined by positive responses to *likelihood to recommend* the HBPC practice, an item on the patient satisfaction survey. This project illustrated the health economics of a HBPC practice, showcased the impact on the patient's experience of care as well as QOL and QALY, and followed the guidelines of the Walden University QI manual.

This project provided protection for human subjects as the name of the partner organization was not be identified. The dataset was de-identified, with all patient identifiers eliminated before being provided to the DNP student for secondary analyses in the DNP project. I committed to following the Walden Institutional Review Board (IRB) manual for an existing QI project and received approval from the Walden IRB, with the IRB approval number of 03-06-20-0701612. The health system IRB was addressed and determined that the DNP QI project was considered exempt.

Significance

Vanleerberghe et al. (2017) have revealed that the elder population in the Western world wish to remain in their own homes as they age. This concept is known as aging in place, which positively influences an individual's well-being. Programs and amenities are being developed to allow aging in place, instead of depending on hospitals and nursing homes for end of life care. HBPC has led to a significant decrease in ER visits, hospitalizations, subacute rehabilitation and, nursing home admissions (Zimmer &

Yang, 2018). Therefore, a successful HBPC practice will enable the elder stakeholder to avoid ER visits and hospitalizations; maintain QOL and age in their own familiar environment.

Other key stakeholders of this project included the DNP project site, which is part of an organization's integrated health care delivery system and, the healthcare organization itself. The DNP project site is involved with Medicare's IAH demonstration. In Performance Year 4, IAH practices saved $32.9 million across the US in the aggregate, an average of $2,814 per beneficiary. The DNP project site was also one of seven, in the 15 participating practices, who earned incentive payments totaling $7,718,162 (CMS.gov, 2019b).

The Veterans Administration's (VA) HBPC program has been in existence since 1972 (Edes et al., 2014). The VA HBPC patients reported they were satisfied with the facilitation of health care provided. The VA HBPC has decreased Medicare costs by 10.8%, with a combined VA plus Medicare reduction in hospitalizations of 25.5%. Non-VA HBPC providers have illustrated a 17% reduction in Medicare costs, averaging an $8500 cost savings per Medicare beneficiary (Yang et al., 2019).

There is an increased need for advanced practice nurses to provide care for frail elders with the growth of the geriatric population in the United States. Walden University's mission of promoting social change discusses actions to promote the worth, dignity and development of individuals. Advanced practice nurses have an obligation to develop program that meets the needs of patients. Providing an evaluation of data to support that care through a home-based program is cost effective may drive greater

numbers in the workforce of advance practice nursing to care for patients living at home, thereby closing the gap in care, and providing greater 24-hour access to care for elder patients, with expectations that ER visits, and hospital admissions will be decreased. Patients will also have an improvement in their QOL, and they will be able to remain in their own home.

Summary

The CDC estimates that 5.7 million adults in the United States, suffer from HF, with a prevalence of 10%–20% in the elder population (Uchmanowicz et al., 2015). Individuals who suffer from HF are at increased risk for frailty syndrome. In the United States, there are approximately 4 million homebound, frail ageing, individuals who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018).

In the United States, the yearly expenditures for HF are estimated at $30.7 billion (CDC, 2019) with 3% of all hospital admissions related to the diagnosis of HF. The HRRP permits CMS to decrease compensation to hospitals with excessive rates of readmissions for patients with FFS Medicare plans. HF is one of six conditions included in the HRRP and patients with HF have a readmission rate as high as 25% within 1 month of discharge (Cowie et al., 2014). Patients with HF account for approximately 42% of the DNP project site's patient population. The health system, in which the HBPC practice is imbedded, has a 30-day readmission rate of 35% for patients with HF (Medicare.gov, n.d.). As a result, the health system loses approximately $13 million a year in overall Medicare penalties.

A gap in practice exists in the United States as there are approximately 4 million homebound, frail, and/or aging individuals who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018). Feltner et al. (2014) have illustrated that comprehensive home-based programs, with recurring visits to patients at home beginning within 1 day of discharge, reduce hospital readmissions for patients with HF within 30 days and over 3-6 months. At the start of this project, the DNP project site had a waiting list of 166 potential patients who did not have access to primary care in their homes. Currently there are only two NPs, including this author, employed in the DNP project site HBPC practice who provide primary care to approximately 350 of the practices 1,400 patients. The NPs in this HBPC practice are responsible for the total care of their patients through regularly scheduled visits.

This project was a retrospective QI project, a program evaluation, which determined that HBPC positively affects HF patient outcomes. Effectiveness of the HBPC practice over time was reviewed. This project also illustrated the cost effectiveness of a HBPC practice, showcased the impact on the patient's experience of care as well as QOL and QALY.

This DNP project was guided by the IHI Triple Aim which examined the triple objective of improved healthcare for individuals, improved population health and decreased expenditures (see CMS, 2018; Stiefel & Nolan, 2012). HF patients were explored, as these individuals are at increased risk for frailty syndrome. Medicare reimbursement models were studied and determined changes made affect care for the

home bound elders. Health economics also informed this project as it guides health care systems to concentrate on effective allocation of resources and health equity.

Section 2: Background and Context

Introduction

Frailty in HF is characterized not only by myocardial failure but also by concomitant metabolic failure, as well as cognitive deficits, functional impairments, physical deficits, mood disorders, undernutrition, and lack of social support (Vitale, Spoletini, & Rosano, 2018). Wang et al. (2018) revealed that the risk of death increases 70% when a person is deemed frail. A LHI of Healthy People 2020 is described as *access to health services*. Health promotion and maintenance is necessary to prevent and control chronic conditions. Therefore, exceptional health care is essential to attain health equity for all citizens of the United States (HHS ODPHP, 2010). Yet, a gap in practice exists as there are approximately 4 million homebound, frail, ageing individuals who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018). Less than 12% of homebound Americans receive any medical care in their homes (Klein et al., 2017). The IAH demonstration provides HBPC to chronically ill patients with multiple comorbidities and difficulties in performing normal ADLs. IAH studies the impact of HBPC on the wellbeing of FFS Medicare beneficiaries including hospitalizations, patient and caregiver satisfaction and reduction of Medicare expenses (CMS, 2017). In Performance Year 4, IAH practices saved $32.9 million across the US in the aggregate, an average of $2,814 per beneficiary (CMS.gov, 2019b). The purpose of this DNP project was to determine the impact of HBPC in decreasing the cost of care, while improving QOL for patients with HF with the practice-focused question of: In patients with HF, does home-based primary care positively affect patient outcomes?

Concepts, Models, and Theories

This DNP project was guided by the IHI Triple Aim Initiative and established that HBPC reduced hospitalizations, provided patient and care giver focused care, improved, or maintained the health of Medicare beneficiaries and, lowered Medicare expenditures. Medicare reimbursement models were reviewed and determined changes made affected care for the home bound elder population. This DNP project was informed by HF patients, as these individuals are at increased risk for frailty syndrome. In the United States, there are approximately 4 million homebound, frail, ageing individuals who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018). The Triple Aim Initiative was used as a framework as it supports a triple objective of improved healthcare for individuals, improved population health and decreased expenditures (CMS, 2018; Stiefel & Nolan, 2012). Lastly, health economics also informed this DNP project as it guides health care systems to concentrate on effective allocation of resources and health equity.

Independence at Home and Medicare Reimbursement Models

The IAH demonstration targets frail elder patients who are responsible for an excessive amount of FFS Medicare spending, and, is now limited to a total of 15,000 FFS Medicare beneficiaries throughout the United States (CMS, 2019b). Eligible FFS Medicare beneficiaries must have two or more comorbidities, require help with two or more basic ADLs, have been hospitalized and have had an acute or subacute rehabilitation admission within the preceding 12 months (CMS, 2017). Only 7% of Medicare beneficiaries are eligible for IAH (Rotenberg, et al., 2018). These individuals

account for 28% of all Medicare FFS spending and 38% of all new referrals for long-term placement (Rotenberg, et al, 2018).

The IAH demonstration is focused on the success of HBPC in improvement in the health of patients, the reduction of hospitalizations, improvement in caregiver and patient satisfaction and decrease in Medicare costs (CMS, 2017). The IAH demonstration and CMS provide incentives by sharing savings with successful HBPC practices who provide cost effective care along with avoidance of preventable hospitalizations. The savings generated depend upon the percentage of six quality metrics met. These quality metrics are ER and inpatient admissions for medical problems that can be cared for in the community, including HF; communication with and/or visits to IAH patients within 2 days of hospital admissions, ER visits and discharge from both; medication reconciliation, documentation of advanced directives and 30-day readmission rates (Rotenberg et al., 2018).

The CMS, in response to the IHI Triple Aim and the need for increased transparency, developed the Medicare Shared Savings Program (Department of Health and Human Services, 2016). This program is an alternative payment model that also focuses on improved healthcare for individuals, improved population health and decreased expenditures (CMS, 2018; Stiefel & Nolan, 2012). The Shared Savings Program allows providers and hospitals to better manage care for CMS patients through Accountable Care Organizations (ACO; Department of Health and Human Services, 2016).

Population health is ingrained in an ACO and the ACO is responsible for the outcomes of the patients they serve. An ACO can be led by physician groups, an integrated delivery system, or a hospital-based system with joint independent practice locations (Patel, Cigarroa, Nadel, Cohen, & Stecker, 2015). The ACO must have payment structures that provide lower-cost, higher-quality care; and the ACO must distribute healthcare outcomes that validate quality care to the public (Patel et al., 2015).

Colla et al. (2016) compared overall CMS spending for the elder population and a medically fragile subgroup of elder beneficiaries before and after enactment of ACOs. This medically fragile subgroup was over the age of 65 years and accounted for 22% of all Medicare recipients. This group had more than two hierarchical condition categories (HCC), including 37% with HF (Colla et al., 2016). In early 2009, the expenditures in this group was over 80% of all Medicare spending and 110% above regular Medicare beneficiaries annually (Colla et al., 2016). After enactment of the ACO, there was a decrease in hospital and skilled nursing spending, as well as a decrease in ER visits and hospital stays, mostly in the medically fragile cohort. It was estimated that ACOs saved over $590 million and cut 15,000,000 hospitalizations and 21,000,000 ER visits for medically fragile cohort in 2012 and 2013 (Colla et al., 2016).The DNP project site is part of an ACO and patients with HF account for approximately 42% of this practice's patient population.

In alignment with the IHI Triple Aim Initiative, Medicare has begun a transition to value-based care that pays providers and practices for quality care not quantity of care they give patients (CMS, 2018). The Triple Aim Initiative and value-based care both

support a triple goal of improved healthcare for individuals, improved population health and decreased expenditures (CMS, 2018; Stiefel & Nolan, 2012). The HRRP was one of five original value-based programs, with HF being one of six conditions included in the program. Feltner et al. (2014) have illustrated that comprehensive home-based programs, with recurring visits to patients at home beginning within 1 day of discharge, reduce hospital readmissions for patients with HF within 30 days and over 3-6 months.

The systematic review and meta-analysis by Nuckols et al. (2017) on quality improvement efforts to reduce hospital admissions after initiation of the HRRP revealed hospital admissions were reduced by over 12% among patients with HF and over 6% in the overall population after initiation of the HRRP. Although quality improvement efforts revealed a discrepancy in savings to health systems, interventions that engaged patients and caregivers revealed a greater savings overall. HBPC programs that engage patients and/or caregivers and have also been shown to decrease hospital admissions.

Heart Failure Patients

The CDC estimated that 5.7 million adults in the United States, suffer from HF, with a prevalence of 10%–20% in the elder population (Uchmanowicz et al., 2015). The 5-year mortality rate for patients who develop HF is approximately 75% (Cowie et al., 2014). The yearly expenditures for HF are estimated at $30.7 billion, which includes the overall cost of care, treatments, and missed days of work (CDC, 2019). The mean cost for HF-related hospitalizations for Medicare patients is $14,631, with an average 5-day hospitalization (Kilgore et al., 2017). The average cost for an ER visit is $1,291 (Fitch et al., 2018).

Individuals who suffer from HF are at increased risk for frailty syndrome. In the United States there are approximately 4 million homebound, frail, ageing individuals who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018). The study by Wang et al. (2018) revealed elder patients with HF have a higher incidence of frailty then other patients in their age group. Frailty frequently suggests a poorer prognosis and, decreases quality life. Frailty with HF causes lethargy, weakness, and difficulties in performing ADLs (Wang et al, 2018). HF patients require early identification of frailty and enrollment in a HBPC program can facilitate this.

Furthermore, HF also affects the patient and caregiver's QOL. These individuals often feel as if they are losing control of their lives and loss of contact with the world outside their homes. HF patients and their caregivers often suffer from depression and anxiety (Punchik et al., 2017). Endeavors such as HBPC programs are being developed internationally to ease the physical and psychological effects of HF, subsequently decreasing healthcare costs (Punchik et al., 2017).

Brännström and Boman (2014) compared traditional clinic care to home based patient centered care (PCC) for patients with HF in Sweden using a team consisting of nurses trained in HF and palliative care, cardiologists, and palliative care physicians. The team was accountable for all aspects of patient care, including their comorbidities. This study revealed that home-based PCC helped improve QOL 28% in the 6 months of the study (Brännström & Boman, 2014). HF symptom reduction, morbidity, and hospitalizations were also reduced. In the data collection, patients also expressed the idea that being visited at home by professionals, instead of in a clinic, increased their sense of

security as they were appreciated as a person not a disease. The patients' viewpoint included increased confidence that the health care team was willing to help them, and the healthcare team was able to customize treatment to the person's way of life (Brännström & Boman, 2014).

Punchik et al. (2017) compared the effect of HBPC on deceased and living HF patients in Israel from 2012- 2015. It was found HBPC reduced hospitalization days over 44% in the deceased group compared to under 30% in the patients who were alive. Admission into a HBPC program also decreased hospitalizations over 59% in the group of patients who died. The results from Israel revealed the cost effectiveness of HBPC throughout the world. In this DNP project, it was determined that HBPC facilitated the goal of reduced hospitalizations and ER visits for patients in the United States.

Maliakkal and Sun (2014) studied low-income HF Medicare patients in south Chicago to determine the effect HBPC on hospital readmissions and QOL. The patients in this study were examined to determine if home care would increase adherence to diet, medications, and fluid restriction and decrease HF symptoms. The patients were supervised by the same PCP which delivered consistency of care and allowed for regular home visits. This patient/PCP familiarity prevented delays in care, disease progression and hospitalizations (Maliakkal & Sun, 2014). Patients also had a decrease in their symptom burden and were more compliant with dietary restrictions and medications. The New York Heart Association HF categories were also decreased in this population, increasing QOL (Maliakkal & Sun, 2014). These results revealed the impact of HBPC on QOL for patients in other areas of the United States and the importance of patient/PCP

awareness. The NPs in this HBPC practice are responsible for the total care of a panel of the same patients through regularly scheduled visits which fosters familiarity. Patient satisfaction surveys of the DNP project site determined there was an impact on QOL for patients with HF**.** Overall, HBPC has shown to positively effect the lives of patients with HF throughout the world.

Triple Aim

The IHI developed the triple aim goals which provide an established and accepted framework to determine value in health innovation (White, Dudley-Brown, & Terhaar, 2016). The first goal of improving a patient's experience of care and the second goal of improving the health of a population is met when the patient is not transported to an ER or admitted to the hospital. The elders in the Western world wish to remain in their own homes as they age (Vanleerberghe et al., 2017). This concept is known as aging in place, which positively influences an individual's well-being (Vanleerberghe et al., 2017). Programs and amenities are being developed to allow aging in place instead of depending on hospitals and nursing homes for end of life care. HBPC decreases ER visits, hospitalizations, subacute rehabilitation admissions and, nursing home admissions for the elder living at home (Zimmer & Yang, 2018). Therefore, HBPC improves the experience of care and wellbeing of patients with HF.

The third goal of the IHI triple aim is to decrease the cost of care for everyone in a population (White et al., 2016). The frail elder population accounts for over 25% of Medicare Part A and B costs, over 45% of CMS admissions and have an annual mortality rate of 23% (Zimmer & Yang, 2018).The yearly expenditures for HF are estimated at

$30.7 billion, which includes the overall cost of care, treatments, and missed days of work (CDC, 2019). The mean cost for HF-related hospitalizations for Medicare patients is $14,631, with an average 5-day hospitalization (Kilgore et al., 2017). The average cost for an ER visit is $1,291 (Fitch et al., 2018).

Spectrum Health Core Health Program in Michigan applied the Triple Aim to evaluate the success of the Core Health Program for patients with HF (Fawcett, Neff, Decker, & Faber, 2018). This program provided home based patient education to patients with HF and Diabetes. Registered nurse (RN) care managers lead the individual Core Health teams and supervised patient care and education. After a year in this program, the HF only cohort had improvements in physical activity and intake of fresh produce. Patient satisfaction with the program was rated 4.6 on a 5-point Likert scale and the rate of hospitalizations decreased from 55.6% to 37.0% in the HF cohort (Fawcett, Neff, Decker, & Faber, 2018). The first goal of the Triple Aim in improving a patient's experience of care was displayed with positive responses to the Spectrum Health Core Health Program patient satisfaction results. The second goal of improving the health of a population was met with the improvement in diet and exercise in this group. The third goal of the IHI triple aim to decrease the cost of care was experienced with the decrease in hospitalization rates in the Spectrum Health Core Health Program patient population. This DNP project was guided by the IHI Triple Aim Initiative and established that HBPC reduced hospitalizations, provided patient and care giver focused care, improved, or maintained the health of Medicare beneficiaries and, lowered Medicare expenditures.

Health Economics

Health economics is the study of health care expenditures and allocation of funds. It guides health care systems to concentrate on effective allocation of resources and health equity (Kernick, 2003). Assessment of finances provides a framework for health care systems to facilitate and inform decision making and, is most beneficial when questions arise concerning the value and the availability of an intervention (McFarland, 2014). Health economics provided a framework for the project, using cost-benefit and cost-utility analyses to evaluate the effectiveness and costs savings of HBPC.

A CBA is one type of a health economics approach to evaluating programs (McFarland, 2014). The CBA uses monetary value to evaluate the significance of an intervention (McFarland, 2014). A CBA of the VA HBPC program revealed a decrease in Medicare costs by 10.8%, with a combined VA plus Medicare reduction in hospitalizations of 25.5% (Edes et al., 2014). Non-VA HBPC providers have illustrated a 17% reduction in Medicare costs, averaging an $8500 cost savings per Medicare beneficiary (Yang et al., 2019). Veterans, their families, and/or their caregivers reported improved access to quality healthcare, more personalized relationships with HBPC providers and an increase in QOL (Edes et al., 2014).

The CUA is a type of cost-effectiveness analysis in which the health outcome is measured in quality and length of life (McFarland, 2014). Researchers use the CUA when QOL is an important or the primary outcome of interest (McFarland, 2014). The QALY is the outcome measure that is used within CUAs and is illustrated as the quality adjusted health outcome (Wichmann et al., 2017). The QALY considers quality of life (“Q”) and

the quantity of life years gained (“LY”) by healthcare interventions (Wichmann et al., 2017). The QALY places a numerical value on health, with 1 being model health without disease, 0 being death and less than 0 meaning severe disease (Wichmann et al., 2017). These scores combined with expected mortality determine the cost-utility ratio of an intervention. The QALY was used to determine that HBPC positively affects HF patient outcomes.

Individuals who suffer from HF are at increased risk for frailty syndrome which is characterized not only by myocardial failure but also by concomitant metabolic failure, as well as cognitive deficits, functional impairments, physical deficits, mood disorders, undernutrition and lack of social support (Vitale et al., 2018). Wang et al. (2018) revealed that the risk of death increases 70% when a person is deemed frail, whereas the 5-year mortality rate for patients who develop HF is approximately 75% (Cowie et al., 2014). As HF progresses, QOL decreases secondary to physical symptoms including dyspnea, fatigue, and edema, causing an increase in dependence on ADLs. Quality of life is also affected by psychological symptoms which can include anxiety, fear, and depression (Wong et al., 2018).

Jia et al. (2019) compared ADLs and QALYs in their research of Medicare beneficiaries aged 65 years and above. Persons who need more assistance with ADLs have a greater likelihood of hospitalizations and nursing home admissions, in turn decreasing QOL. Their research revealed as dependence on ADLs increased, QALYs decreased. Beneficiaries who had difficulty ambulating had a QALY of 2.8 and those who could not bath, dress or feed themselves had a QALY of 1.6 (Jia et al., 2019). In this

DNP project functional status, as measured by the ADL component of the CMS frailty score, was used to determine QALY.

Arrospide et al. (2016) performed a retrospective cost effectiveness analysis for the years 1996- 2011 on breast cancer (BC) screening for females in Spain. The cost effectiveness analysis was combined with the QALY and compared females who were screened for BC with those who were not. The results of this study revealed that although breast cancer screening costs were greater than €1 million, the screening delivered over 6 million QALYs over the life span of these Spanish women. The incremental cost benefit ratio was over €4200/QALY.

Stall et al., 2014, demonstrated in a systematic review that HBPC programs led to a significant decrease in ER visits, hospitalizations, subacute rehabilitation and, nursing home admissions. Effective HBPC programs incorporate planned meetings with all providers and support staff, behavioral health, social support and, around the clock telephone contact with rapid resolution of needs (Stall et al., 2014). The IAH Demonstration provides HBPC to chronically ill patients with multiple comorbidities and difficulties in performing normal ADLs. Independence at Home studies the impact of HBPC on the wellbeing of Medicare beneficiaries including hospitalizations, patient and caregiver satisfaction and reduction of Medicare expenses. The IAH demonstration and CMS provide incentives by sharing savings with HBPC practices that provide high-quality, cost effective care along with avoidance of preventable hospitalizations.

Thus, health economics provided a methodological framework for the retrospective QI program evaluation in a HBPC program. Patients with HF account for

approximately 42% of this practice's patient population. De-identified data was obtained from the site for secondary analyses. This data included: (a) patient frailty score, (b) years since HF diagnosis via echocardiogram, (c) patient days of hospital admission and readmission, (d) use of the ED, (e) patient satisfaction results.

Definitions of Term

Functional Status: Functional status is defined as a person's ability to execute normal activities of daily living required to meet essential needs such as bathing and toileting and feeding one's self. Functional status can be determined by dependencies of ADLs and instrumental ADLs.

Frailty: Frailty or frailty syndrome is characterized by functional and cognitive impairments, physical deficits, and mood disorders. Symptoms include weakness, decreased physical activity, slow walking speed, poor balance, weight loss and visual impairments (Vitale et al., 2018, Xue, 2011).

Quality of life: The World Health Organization defines QOL as an individual's view of their life situation in the context of psychological and physical health, social support, and connection with their environment (WHO, n.d.)

Value-Based Care: Value-based Care is a Medicare initiative which compensates providers and healthcare facilities for quality care not quantity of care they give patients. Value-based care supports the triple goal of improved healthcare for individuals, improved population health and decreased expenditures (CMS, 2018; Stiefel & Nolan, 2012).

Health Economics: Health economics is the study of health care expenditures and allocation of funds (Kernick, 2003). Assessment of finances provides a framework for health care systems to facilitate and inform decision making and, is most beneficial when questions arise concerning the value and the availability of an intervention (McFarland, 2014). By using CBA and CUA, the health economic approach was used to determine the effect of HBPC on patients with HF.

Cost Utility Analysis: CUA is a type of cost-effectiveness analysis in which the health outcome is measured in quality and length of life. Researchers use the CUA when QOL is an important or the primary outcome of interest (McFarland, 2014).

Quality-Adjusted Life Year or QALY: The Quality-Adjusted Life Year (QALY) is the outcome measure that is used in the cost-utility analysis and is illustrated as the quality adjusted health outcome. The QALY considers quality of life ("Q") and the quantity of life years gained ("LY") by healthcare interventions (Wichmann et al., 2017). In the DNP project QALY was calculated as a function of frailty, as illustrated by ADL dependence, years since diagnosis with HF, and years enrolled in HBPC.

Cost Benefit Analysis: CBA is one type of a health economics approach to evaluating programs. The CBA uses monetary value to evaluate the significance of an intervention (McFarland, 2014).

Relevance to Nursing Practice

The CDC estimates that 5.7 million adults in the United States, have the condition of HF, with a prevalence of 10%–20% in individuals 66 years of age and older (Uchmanowicz et al., 2015). The 5-year mortality rate for patients who develop HF is

approximately 75% (Cowie et al., 2014). The yearly expenditures for HF are estimated at $30.7 billion, which includes the overall cost of care, treatments, and missed days of work (CDC, 2019). In the United States, 3% of all hospital admissions are related to the diagnosis of HF, with the readmission rate being as high as 25% within 1 month of discharge (Cowie et al., 2014). The mean cost for HF-related hospitalizations for Medicare patients is $14,631, with an average 5-day hospitalization (Kilgore et al., 2017). The average cost for an ER visit is $1,291 (Fitch et al., 2018).

Individuals with HF are at increased risk for frailty syndrome. Although there is no true definition of frailty, it can be described as a clinical condition in which patients are more susceptible to the adverse effects of a disease such as HF. It is important to define frailty as these patients are at risk for metabolic failure, as well as cognitive deficits, functional impairments, physical deficits, mood disorders, undernutrition, and lack of social support (Vitale et al., 2018). Frailty frequently suggests a poorer prognosis and, decreases quality life. After an illness, the frail individual endures a prolonged recovery period, during which time this population is at risk of adverse events, including falls, delirium, and disability (Buckinx et al., 2015). Wang et al. (2018) revealed that the risk of death increases 70% when a person is deemed frail. In the United States there are approximately 4 million homebound, frail, ageing individuals who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018).

The frail elder population in the United States account for over 25% of Medicare Part A and B costs, over 45% of CMS admissions and have an annual mortality rate of 23% (Zimmer & Yang, 2018). The IAH demonstration targets frail elders who are

responsible for an excessive amount of FFS Medicare spending. Only 7% of Medicare beneficiaries are eligible for IAH yet, these individuals account for 28% of all FFS spending and 38% of all new referrals for long-term placement (Rotenberg et al, 2018). In the United States it is estimated that 1 million to 3.6 million individuals over the age of 65 are permanently homebound (Stall et al., 2014). Home bound individuals suffer from multiple, high cost, chronic conditions and have a 2-year mortality rate of 40% (Yang et al., 2019). Less than 12% of homebound Americans receive any medical care in their homes (Klein et al., 2017). These homebound individuals cannot visit their PCP and often turn to the emergency department with subsequent hospitalizations when they fall ill. Hospitalizations for the homebound can be detrimental causing functional decline, loss of the ability to remain home and increased risk of admission to nursing homes (Stall et al., 2014).

There is an increased need for nursing care and education on care of the frail elder with the growth of the geriatric population in the United States. Advanced practice nurses have an obligation to develop programs that meets the needs of patients. Providing care through a home-based program is not only cost effective, it is the right thing to do for patients. Therefore, by closing the gap in care, and providing 24-hour access to care which includes an in office provider to answer urgent calls during office hours; a call center staffed by registered nurses (RN); and the availability of specially trained paramedics to respond to urgent needs, ER visits, and hospital admissions will be decreased. Patients will also have an improvement in their QOL as they will be able to remain in their own home.

Apps and Phelan (2018) discussed the positive effects nursing had in their research on HF patients in England. In this study, frail HF patients were followed in the community by an advanced community provider (ACP), which is the United Kingdom's equivalent of an American NP. This allowed for early detection of decompensation and symptom management and avoidance hospital admissions. Patients were followed through progression of the disease, with management of comorbidities and were assisted with advanced care planning. Feedback from patients on satisfaction surveys reported improved QOL. The NPs in this HBPC practice are responsible for the total care of a panel of the same patients which fosters familiarity. Patient satisfaction surveys of the DNP project site determined there was an impact on QOL for patients with HF**.**

Local Background and Context

The purpose of this DNP project was to determine the impact of HBPC in decreasing the cost of care, while improving quality of life for patients with HF, at the DNP project site, a HBPC practice. This author is an NP in the HBPC practice located in a suburban area on the east coast of the United States. The HBPC practice is a participant in the Medicare IAH Demonstration. Independence at Home provides HBPC to chronically ill patients with multiple comorbidities and difficulties in performing normal ADLs. Independence at Home studies the impact of HBPC on the wellbeing of FFS Medicare beneficiaries including hospitalizations, patient and caregiver satisfaction and reduction of Medicare expenses. (CMS, 2017). The IAH demonstration and CMS provide incentives by sharing savings with successful HBPC practices who provide cost effective care along with avoidance of preventable hospitalizations. The savings generated depend

upon the percentage of six quality metrics met. These quality metrics are ER and inpatient admissions for medical problems that can be cared for in the community, including HF; communication with and/or visits to IAH patients within 2 days of hospital admissions, ER visits and discharge from both; medication reconciliation, documentation of advanced directives and 30-day readmission rates (Rotenberg et al., 2018).

The DNP project site is a HBPC practice which employs seven full time equivalent (FTE) providers, consisting of nine physicians and two full time NPs, who service 1,400 patients. Geriatric patients comprise approximately 90% of this practice's patient population, of which 42% suffer from HF. The DNP practice site serves 300 IAH patients and continues to meet all six required quality metrics. The practice site also received an incentive payment of over $1.9 million in Performance Year 4.

Role of the DNP Student

As a nurse practitioner and provider in this practice, I am an active participant in ensuring the IAH quality metrics are met. I am the PCP for 202 of the patients in this practice and have always had an interest in HF, as such I wanted to determine how HBPC affects care for HF patients.

My role as the DNP student included examining deidentified data on HF patients for secondary analysis and determined that home-based care facilitated the goal of reduced hospitalizations and ER visits and, improved both QOL and QALY for a sample of patients from the practice. All data was de-identified and provided to me in the aggregate for secondary analysis. Thus, as the DNP student I did not have direct access to medical records. Patient satisfaction survey data were reviewed and determined there was

an impact on QOL for patients with HF (an item on the present patient experience survey). Patient and caregiver perception of the practice was determined by positive responses likelihood to recommend the HBPC practice. This project illustrated the cost effectiveness of a HBPC practice and followed the guidelines of the Walden University QI manual.

One potential bias that could have been encountered was, the HBPC practice is one of 14 participating HBPC practices involved in the IAH demonstration. Therefore, key pieces of evidence were removed to avoid disclosure of the organization's identity. This evidence included sum of incentive payments from Medicare and practice location.

Role of the Project Team

The project team for this DNP project included the HBPC practice leadership who facilitated access to aggregated de-identified project data. The health system internal review board (IRB) allowed access to HF patient information, including reporting of HF failure patient data in the aggregate for their ER and hospital admissions and satisfaction survey results. The HBPC embedded performance improvement project manager engaged in data collection.

Summary

A LHI of Healthy People 2020 is access to health services (HHS ODPHP, 2010). Health promotion and maintenance is necessary to prevent and control chronic conditions. Therefore, exceptional health care is essential to attain health equity for all citizens of the United States (HHS ODPHP, 2010). Yet, a gap in practice exists as there are approximately 4 million homebound, frail, ageing individuals who can no longer

leave their homes to visit their PCP (Ritchie & Leff, 2018). Less than 12% of homebound Americans receive any medical care in their homes (Klein et al., 2017). The IAH demonstration provides HBPC to chronically ill patients with multiple comorbidities and difficulties in performing normal ADLs. Independence at Home also examines whether home-based care can reduce the need for hospitalization, improve patient and caregiver satisfaction, and lead to better health for beneficiaries and lower Medicare expenditures.

The purpose of this DNP project was to conduct a thorough program evaluation including CBA and CUA to determine the effectiveness of the HBPC particularly, on patient outcomes, including inpatient admissions, 30-day readmissions, ER use and patient self-reported QOL. The primary outcome of the DNP project will be to close the gap in practice experienced by the patients who are eligible for the HBPC program but are presently on the waiting list for the program. The program evaluation focused on patients with HF, as these individuals are at increased risk for frailty syndrome and was be guided by the IHI Triple Aim. The program evaluation established that HBPC reduced hospitalizations, provided patient and caregiver focused care, improved, or maintained the health of Medicare beneficiaries and, lowered Medicare expenditures. The Triple Aim Initiative was used as a framework as it supports a triple goal of improved healthcare for individuals, improved population health and decreased expenditures (CMS, 2018; Stiefel & Nolan, 2012). Lastly, health economics informed this DNP project as it guides health care systems to concentrate on effective allocation of resources and health equity.

Section 3: Collection and Analysis of Evidence

Introduction

The CDC estimates that 5.7 million adults in the United States suffer from HF, with a prevalence of 10%–20% in the elder population (Uchmanowicz et al., 2015). The yearly expenditures for HF are estimated at $30.7 billion, which includes the overall cost of care, treatments, and missed days of work (CDC, 2019). The mean cost for HF-related hospitalizations for Medicare patients is $14,631, with an average 5-day hospitalization (Kilgore et al., 2017). The average cost for an ER visit is $1,291 (Fitch et al., 2018). In the United States, 3% of all hospital admissions are related to the diagnosis of HF, with the readmission rate being as high as 25% within 1 month of discharge (Cowie et al., 2014).

Individuals who suffer from HF are at increased risk for frailty syndrome (Ritchie & Leff, 2018). Frailty in HF is characterized not only by myocardial failure but also by concomitant metabolic failure, as well as cognitive deficits, functional impairments, physical deficits, mood disorders, undernutrition, and lack of social support (Vitale et al., 2018). Wang et al. (2018) revealed that the 5-year mortality rate for patients who develop HF is approximately 50% and the risk of death increases 70% when a person is deemed frail.

Vanleerberghe et al. (2017) have illustrated that individuals at the end of their life prefer to be in their own home with family and friends providing care. In the United States it is estimated that 1 million to 3.6 million individuals over the age of 65 are permanently homebound. These homebound individuals cannot visit their PCP and often

turn to the emergency department with subsequent hospitalizations when they fall ill. Hospitalizations for the homebound can be detrimental causing functional decline, loss of the ability to remain home, and increased risk of admission to nursing homes (Stall et al., 2014). The 2-year mortality rate of homebound persons is over 40%, and homebound individuals have a high illness burden, poor prognosis, and high-cost needs (Yang et al., 2019).

Stall et al. (2014) demonstrated in a systematic review that HBPC programs led to a significant decrease in ER visits, hospitalizations, subacute rehabilitation, and nursing home admissions. Effective HBPC programs incorporate planned meetings with all providers and support staff, behavioral health, social support, and around the clock telephone contact with rapid resolution of needs. Feltner et al. (2014) have illustrated that comprehensive home-based programs, with recurring visits to patients at home beginning within 1 day of discharge, reduce hospital readmissions for patients with HF within 30 days and over 3-6 months. Therefore, by providing HBPC, hospital readmissions will be reduced or avoided. This is turn will lower Medicare expenditures and reduce costs to health systems.

Home-based care can help chronically ill patients with multiple comorbidities and difficulties in performing normal ADLs. In addition, home-based care can reduce the need for hospitalization, improve patient and caregiver satisfaction, and lead to better health for patients and lower Medicare expenditures. The DNP project site is a participant in the IAH demonstration, which delivers HBPC to chronically ill FFS Medicare patients with multiple comorbidities and difficulties in performing ADLs.

The purpose of this DNP project was to determine the impact of HBPC in decreasing cost of care, while improving QOL for patients with HF. I am a NP in a HBPC practice located in a suburban area on the east coast of the United States. This HBPC practice is the DNP project site which services 1,400 patients. Therefore, this section of this paper will discuss the practiced focused question, the sources of evidence generated for the DNP project including published outcomes and research. Archival and operational data from the HBCP practice was also reviewed to determine the impact of HBPC in decreasing cost of care, while improving quality of life for patients with HF.

Practice-Focused Question

The CDC estimates that 5.7 million adults in the United States, suffer from HF, with a prevalence of 10%–20% in the elder population (Uchmanowicz et al., 2015). Individuals who suffer from HF are at increased risk for frailty syndrome. The frail elder population accounts for over 25% of Medicare Part A and B costs, over 45% of CMS admissions and have an annual mortality rate of 23% (Zimmer & Yang, 2018).

A LHI of Healthy People 2020 is access to health services. Yet, a gap in practice exists as there approximately 4 million homebound, frail, ageing individuals who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018). Less than 12% of homebound Americans receive any medical care in their homes (Klein et al., 2017).

Stall et al. (2014) demonstrated that HBPC programs led to a significant decrease in ER visits, hospitalizations, subacute rehabilitation and, nursing home admissions. The IAH demonstration provided HBPC to chronically ill patients with multiple comorbidities and difficulties in performing normal ADLs (Rotenberg et al., 2018). IAH studied the

impact of HBPC on the wellbeing of FFS Medicare beneficiaries including hospitalizations, patient and caregiver satisfaction and reduction of Medicare expenses (CMS, 2017). In Performance Year 4, IAH practices saved $32.9 million across the US in the aggregate, an average of $2,814 per beneficiary (CMS.gov, 2019b).

The DNP project site is a HBPC practice which serves 1,400 patients. Geriatric patients comprise approximately 90% of this practice's patient population, of which 42% suffer from HF. Thus, the practice-focused question that framed this DNP project was *In patients with HF, does home-based primary care positively affect patient outcomes?*

Sources of Evidence

Sources of evidence that were used to address the practice focused question included operational and archival data collected from the DNP project site. The data was de-identified for secondary analyses in the DNP project which, was a retrospective, QI program evaluation. The project was well supported with evidence from the research literature as well as a health economics methodological framework.

Vanleerberghe et al. (2017) have illustrated that as an individual ages, they prefer to remain in their own home with the assistance of family and friends. In the United States it is estimated that 1 million to 3.6 million individuals over the age of 65 are permanently homebound. These homebound individuals cannot visit their PCP and often turn to the emergency department with subsequent hospitalizations when they fall ill. Hospitalizations for the homebound can be detrimental causing functional decline, loss of the ability to remain home and increased risk of admission to nursing homes (Stall et al.,

2014). Home bound individuals suffer from multiple, high cost, chronic conditions and have a 2-year mortality rate of 40% (Yang et al., 2019).

The CDC estimates that 5.7 million adults in the United States, suffer from HF, with a prevalence of 10%–20% in the elder population (Uchmanowicz et al., 2015). The yearly expenditures for HF are estimated at $30.7 billion, which includes the overall cost of care, treatments, and missed days of work (CDC, 2019).

In the United States, 3% of all hospital admissions are related to the diagnosis of HF (Cowie et al., 2014). The 30-day readmission rate for patients hospitalized with HF can be as high as 25%. Feltner et al. (2014) have illustrated that comprehensive home-based programs, with recurring visits to patients at home beginning within 1 day of discharge, reduce hospital readmissions for patients with HF within 30 days and over 3-6 months. Therefore, data on admissions and 30-day readmissions were reviewed at the DNP HBCP practice site and determined that HBPC decreases hospitalizations cost of care and further decline.

Published Outcomes and Research

Using the Walden University and Hofstra University libraries, data were obtained for the literature search using OVID, Medline, PubMed, and CINAHL. Google Scholar was used when needed. The years 2014-2019 were used to search peer reviewed literature on terms which included *heart failure, congestive heart failure, cardiac heart failure, frailty, home based primary care, nursing, nurse practitioner, Independence at Home, IHI Triple Aim, health economics, QALY, Medicare shared savings* and *accountable care organizations*.

Archival and Operational Data

Health system archival and operational data that was used for this project, was secured as de-identified information on hospital admissions, readmissions, and ER visits for patients with HF from the years of 2017- 2019. Data from two practices in the health system on admissions, 30-day readmissions, ED use, and LOS are easily retrievable and were provided to me by the site in the aggregate, in a de-identified excel file for secondary analyses. Patients who had died during the 3-year period under retrospective evaluation were not included in the sample. The HBPC and a generic Medicare practice were produced with matches on age (75 and older), gender and volume (with the same number of patients in each dataset). A power analysis was used to determine sample size in order to compare costs of the two samples in the CBA, which is a cost to cost comparison in monetary outcomes. That is, I explored whether the cost outcomes associated with care of the patient in the HBPC practice substantially differ from the patients in a comparative practice without home-based care and with traditional primary care.

CUA requires a comparison of cost to outcome, in this DNP project, to QALY, measured as a function of frailty, years since diagnosis with HF, as a proxy measure of mortality, and years enrolled in HBPC. These three components were used to measure QALY (McFarland, 2014). The organization provided deidentified data on frailty to determine the QALY.

Financial cost of care for HF patients was measured by admissions, readmissions within 30 days, and ED visits to determine the cost saving benefit of HBPC. Finally,

patient satisfaction scores were reviewed and determined HBPC had an impact on QOL for patients with HF. In an effort to control potential confounding variables, a cadre of patients from the home-based care program, were matched on diagnosis, number of comorbid conditions, on age and gender to a like sample of patients from the Medicare FFS practice, who did not have the benefit of home-based care. The comparison on the use of hospital services: admissions, readmissions, use of the ED is included in the analysis.

Frailty in HF is characterized not only by myocardial failure but also by concomitant metabolic failure, as well as cognitive deficits, functional impairments, physical deficits, mood disorders, undernutrition, and lack of social support (Vitale et al., 2018). Frailty is measured by functional status, which includes the instrumental ADL (IADL) and ADL dependence of the Medicare beneficiary. The IADL is used to establish if a person can continue to live in their community unaided (Burman, Sembiah, Dasgupta, Paul, Pawar, & Roy 2019). The IADLs includes the ability to use a phone, shopping, preparing meals, housekeeping, laundry, using transportation, and managing medications and finances. The ADLs are bathing, eating, dressing, toileting, transferring, and walking and are measured yearly to capture changes in functional status. The CMS frailty score ranks from a low of zero with no infirmity and ability to complete all activities of daily living independently, to a score of 6 which describes a patient totally dependent on others (CMS.gov, 2017).

Patient satisfaction surveys were reviewed in the aggregate and determined there was an impact on QOL for patients with HF. Patient and caregiver perception of the

practice was determined by positive responses to likelihood to recommend the HBPC practice. The HBPC practice had its own patient satisfaction survey until they transitioned to the health care system which uses the Press Ganey Satisfaction Survey. Summary rates provided in the aggregate were compared.

Evidence Generated for the Doctoral Project

The project team for this DNP project functioned as an expert panel. The expert panel received the report and contributed to the discussion regarding future strategic direction of the HBPC. The evidence collected served as a proving ground that illustrated how HBPC positively affects patient outcomes.

Participants. Participants in this DNP project included three directors of the HBPC practice and the performance improvement project manager. These individuals served as the expert panel and reviewed the final report to determine the outcome in terms of next steps. Their review will be key in determining whether the data supplied provides adequate evidence to address the patient waiting list and whether or not to expand the program.

Procedures. The expert panel was contacted via email to arrange for a 1 hour meeting to present the findings of the DNP project. The data from the DNP project was presented via a power point presentation that included charts, graphs and analyses that answered the practice focused question. The outcome of this data will be used as part of the HBPC program's annual report to the health system.

There are five key elements of the data collection that was showcased to the expert panel. These elements included ER visits, admissions and readmissions, improved

quality of life as measured by QALYs, and patient satisfaction for FFS Medicare HBPC patients. The final report included the CUA and CBA as well as the data on QOL and patient satisfaction.

Protections. This project provided protection for human subjects as the name of the partner organization was not be identified. Data was provided in the aggregate for secondary analyses and formed the basis of the QI program evaluation. As a practice involved in the IAH project, key pieces of evidence were removed to avoid disclosure of the organization's identity.

I committed to following the Walden blanket IRB manual for an existing QI project and, received approval from the Walden IRB. The health system IRB was addressed and determined that the DNP QI project was considered exempt. The site consent of the Walden QI manual was also submitted to the Walden IRB.

Analysis and Synthesis

This DNP project was retrospective QI program evaluation to review effectiveness of a HBPC practice over time to illustrate cost effectiveness, patients' experience of care and improvement of quality of life. A matched sample of male and female FFS Medicare patients with HF aged 75 years and older, with three or more comorbidities from the HBPC practice and patients who were enrolled in the Medicare transitional care management (TCM) practice after hospitalization for HF were compared and determined that HBPC positively affects patient outcomes. Hospital admissions, readmissions and, ER visits were compared for patients with HF in both cohorts in a CBA. A comparison based on cost and QOL using QALY on the two practices employed

the use of the nonparametric Wilcoxon Signed ranks test. The years 2017 - 2019 were used and determined, participation in home-based care facilitated the goal of reduced hospitalizations and ER visits, consequently lowering Medicare expenditures, with a continuing downward trend in resource use for the HBPC practice.

After checking for normality in the data and the extent to which the other assumptions were met, appropriate parametric and equivalent non-parametric statistics were used to determine differences between the groups in the cost benefit analysis. Wilcoxon Signed ranks test were used to test the differences in the CUA. Descriptive statistics from patient satisfaction surveys were reviewed and established a positive impact on patient QOL in the HBPC practice.

Summary

The purpose of this DNP project was to determine the impact of HBPC in decreasing the cost of care, while improving quality of life for patients with HF. De-identified HF data from the project site and the health system from the years of 2017-2019 were reviewed and determined HBPC decreases hospitalizations, cost of care and further decline. The IAH demonstration results were also examined. Both results were compared and, it was established that the HBPC program should be expanded by hiring another nurse practitioner to decrease the current wait list.

Section 4: Findings and Recommendations

Introduction

A LHI of Healthy People 2020 is access to health services (HHS ODPHP, 2010). Health promotion and maintenance is necessary to prevent and control chronic conditions. Therefore, exceptional health care is essential to attain health equity for all citizens of the United States (HHS ODPHP, 2010). Yet, a gap in practice exists as there are approximately 4 million homebound, frail, aging individuals across the country who can no longer leave their homes to visit their PCP (Ritchie & Leff, 2018). Less than 12% of homebound Americans receive any medical care in their homes (Klein et al., 2017).

In the United States, the yearly expenditures for HF is estimated at $30.7 billion (CDC, 2019). Of all hospital admissions, 3% are related to the diagnosis of HF with the readmission rate being as high as 25% within 1 month of discharge (Cowie et al., 2014). Feltner et al. (2014) have illustrated that comprehensive home-based programs, with recurring visits to patients at home beginning within 1 day of discharge, reduce hospital readmissions for patients with HF within 30 days and over 3 to 6 months.

In a systematic review by Stall et al. (2014), HBPC programs lead to a significant decrease in ER visits, hospitalizations, subacute rehabilitation and, nursing home admissions for all patients. I am a nurse practitioner in a HBPC practice, which was also the DNP project site. The health system, in which the HBPC practice is embedded, has a 30-day readmission rate of 35% for patients with HF (Medicare.gov, n.d.). As a result, the health system loses approximately $13 million a year in overall Medicare penalties. The purpose of this DNP project was to determine the impact of HBPC in decreasing the

cost of care, while improving QOL and QALY for patients with HF. Thus, the practice-focused question that framed this DNP project was *In patients with HF, does home-based primary care positively affect patient outcomes as measured by QOL and QALY and reduce the cost of care, as measured by reduced admissions, 30 day readmissions and ER visits?*

Health system archival and operational data that were used for this project, were secured as de-identified information on hospital admissions, readmissions, and ER visits for FFS Medicare patients with HF from the years of 2017- 2019. Financial cost of care for HF patients was measured by readmissions within 30 days, admissions, and ED visits to determine the cost saving benefit of HBPC. To control potential confounding variables, a cadre of patients from the home-based care program were matched on diagnosis, number of comorbid conditions, on age and gender to a like sample of patients from the Medicare TCM practice. The HBPC patients were referred to the practice by private care practices when patients became homebound and were eligible for HBPC. The TCM patients also benefited from home visits and were referred to the program while inpatients upon discharge. The comparison on the use of hospital services: admissions, readmissions, and use of the ED is included in the analysis.

De-identified data using the years since diagnosis of HF, ADL dependence, and years enrolled in HBPC were used to determine the cost outcomes of the HBPC program. The QALY considers quality of life (“Q”) and the quantity of life years gained (“LY”) by healthcare interventions (Wichmann et al., 2017). The QALY is the outcome measure that is used within CUAs and is illustrated as the quality adjusted health outcome

(Rotenberg et al., 2018). CUA requires a comparison of cost to outcome, in this DNP project, to QALY (McFarland, 2014). From the entire EHR, subsamples were matched on age, gender, and sample size resulting in a final sample of 119 with 60 in the HBPC group and 59 in the TCM group. A power analysis to assure at least an 80% power with a moderate effect size was used to determine sample size.

Patient satisfaction surveys were reviewed in the aggregate. Patient perceived QOL is an item on the present patient experience survey. Patient and caregiver perception of the practice was determined by likelihood to recommend the HBPC practice. The HBPC practice had its own patient satisfaction survey until they transitioned to the health care system which uses the Press Ganey Satisfaction Survey. Summary rates provided in the aggregate were compared.

Findings and Implications

This DNP project was a retrospective QI program evaluation to determine the effects of HBPC on patients with HF using a matched sample of male and female FFS Medicare patients with HF aged 75 years and older, with three or more comorbidities. There were 60 patients who were already enrolled in the HBPC practice in the years 2017 – 2019 whose data were compared to 59 patients referred to the practice in the same years. Of the 59 patients, over half (37; 63%) were referred to the practice from the TCM team during a hospitalization for HF. The other 22 patients were referred to the HBPC practice from other ambulatory practices in the health system as they had difficulty leaving or could not leave their homes to get to their PCP. All 119 patients were enrolled in the HBPC practice during the program evaluation and continue to receive HBPC.

The data for this project was analyzed using IBM SPSS Statistics (Version 27) predictive analytics software. As the data were not normally distributed, nonparametric tests were used in the analyses. A nonparametric Wilcoxon Signed ranks test revealed there were no significant differences between HBPC and TCM patients in relationship to age, HF stage, the number of comorbidities and the years since diagnosis of HF for the HBPC and TCM groups (See Table 1). These results indicate that the groups were equal on key factors that might interfere with the overall outcomes and results.

Table 1

Comparison on Patient Characteristics

	HBPC *N* = 60 *M* (*SD*)	TCM *N* = 59 *M* (*SD*)	Significance
Age	89.77 (6.92)	89.51 (5.94)	.828
Number of comorbidities	10.65 (4.44)	11.54 (3.35)	.219
Years since HF diagnosis	4.60 (2.73)	5.19 (3.74)	.331
HF stage	2.60 (0.56)	2.8 (0.69)	.090

A CBA was performed to compare admissions, readmissions and ER visits and cost of these hospital encounters for patients in both the HBPC and TCM groups for the years 2017 – 2019 (See Table 2). The mean cost for HF-related hospitalizations for Medicare patients is $14,631(Kilgore et al., 2017). The average cost for an ER visit is $1,291 (Fitch et al., 2018). These statistics were used to calculate the cost of care in this project.

The HBPC group experienced no significant change in total number of hospital admissions, inpatient days, or ER encounters for the years reviewed. There was a minor increase in readmission rates during this period for this group. There was a marginal

decrease in total cost of inpatient care, but the overall ER cost revealed a slight increase for this group of patients who was enrolled in the HBPC practice.

The positive affect of HBPC on patients with HF was discovered with the CBA that was executed for the TCM group (See Table 2). Over half of the patients in TCM group were admitted to the HBPC practice after a hospital admission for HF. This analysis revealed the total number of hospital admissions and inpatient days decreased after enrollment to the HBPC practice. Readmission rates and emergency department encounters also declined. Total cost of inpatient care revealed a significant decline and there was an overall decrease in ER cost after enrollment in HBPC.

Table 2

HBPC and TCM from Start of Care (SOC) to 2019

	Inpatient days	Admissions	ED Visits	Readmissions	Total cost inpatient	Total cost ED care
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
HBPC (*n* = 60)	0.98 (18.89)	0.59 (2.30)	-0.17 (1.66)	-0.09 (0.49)	2900.60 (72697.62)	-284.46 (2734.09)
Significance	.724	.395	.086	.201	.489	.040
TCM (*n* = 59)	22.86 (24.53)	2.68 (2.48)	1.18 (1.96)	0.52 (1.09)	65553.64 (34705.59)	1513.59 (2923.38)
Significance	<.0001	<.0001	.002	.002	<.0001	<.0001

The CBA for all 119 patients in the project revealed a 46% decrease in inpatient days after enrollment in HBPC. Hospital admissions decreased by 49% and readmissions decreased 40%. Emergency department encounters decreased 27%. The total inpatient cost savings was 48% with an ED cost savings of 28%.

The CUA for this study evaluated frailty, as illustrated by ADL dependence, years since diagnosis with HF, and years enrolled in HBPC to determine the QALY. The CMS frailty score ranks from a low of zero with no infirmity and ability to complete all activities of daily living independently, to a score of 6 which describes a patient totally dependent on others (CMS.gov, 2017). The HBPC patient ADL dependence at SOC in the HBPC practice and in 2019 were compared. A Wilcoxon signed rank test revealed a statistically significant increase in dependence on ADLs in 35 patients in the HBPC group from SOC to 2019. There were 25 patients in the HBPC group who exhibited no variation in ADL dependence from SOC to 2019. These results revealed the HPBC patients were more dependent in ADLs from SOC to 2019. This result can be somewhat explained by years in the HBPC practice (n = 60, M = 3.90, SD = 1.434). Other variables can include advancing age and chronic disease progression.

The TCM ADL dependence at SOC and 2019 were also compared (See Table 3). A Wilcoxon signed rank test did not reveal a statistically significant difference in dependence on ADLs in 36 patients in the TCM group from SOC to 2019. There were 23 patients in the TCM group who exhibited no variation in ADL dependence from SOC to 2019. These results revealed the TCM patients had no significant change in ADLs from SOC to 2019. This can also be somewhat explained by years with the HBPC practice: (n = 59, M = .88, SD = .811) (see Table 3).

Table 3

HBPC vs TCM ADL Comparisons

	SOC ADL *M* (*SD*)	2019 ADL *M* (*SD*)	Significance
HBPC	3.77 (2.07)	5.15 (1.86)	<.0001
TCM	4.54 (1.90)	4.03 (2.22)	.166

An element of the CUA used to calculate QALY for this study was years since diagnosis with HF. The ADL reverse-scored for the QALY calculation, with the score of 7 having no ADL dependence and the score of 1 being total ADL dependence (See Table 3). The years since diagnosis with HF for the HBPC group (n = 60, M = 4.85, SD = 3.429) were not statistically different than the TCM group (n = 59, M= 4.73, SD = 3.854). The average years since diagnosis of HF for all 119 patients in the study was 4.79.

The QALY places a numerical value on health, with 1 being *model health without disease*, 0 being *death* and less than 0 meaning *severe disease* (Wichmann et al., 2017). These scores combined with expected mortality determine the cost-utility ratio of an intervention. In the DNP project QALY was calculated as a function of frailty, as illustrated by ADL dependence, years since diagnosis with HF, and years enrolled in HBPC. The health care intervention was enrollment into the HBPC practice, which was the DNP project site. The CUA for the HBPC patients revealed an increase of QALY from SOC to 2019 while enrolled in the HBPC practice (See Table 4). The CUA for the TCM patients also revealed an increase in QALY from before to after enrollment in the

HBPC practice There was an overall increase in QALY from SOC (*N* = 119, *m* = .96) to 2019 (*N* = 119, *m*= 3.23) demonstrating the effectiveness of HBPC on increasing QALY for home bound HF patients. (see Table 4).

Table 4

HBPC vs TCM QALY Comparisons

	SOC QALY *M (SD)*	2019 QALY *M (SD)*	Significance
HBPC	0.55 (1.02)	3.55 (3.08)	<.0001
TCM	1.38 (2.00)	2.92 (3.11)	<.0001

Patient satisfaction surveys for the HBPC practice were reviewed in aggregate for the years 2017- 2019. The surveys were filled out by the patient, family member or formal care giver. Three questions were reviewed which pertained to the DNP project. These questions were (a) would you recommend the HBPC practice to family or friends, (b) did the HBPC practice decrease visits to the ER. This question was changed in the third quarter of 2018 to inquire if patient was better able to manage their care as a result of being enrolled in a HBPC practice, (c) did having HBPC improve quality of life. The survey uses a 5-point Likert scale with strongly agree being the highest response available. The overall score for likelihood to recommend the practice, with strongly agree responses, for the 3 years reviewed was 82.7%. In 2017 and the first two quarters of 2018, 61% of the respondents strongly agreed that the HBPC practice decreased visits to the ER. Of the respondents reporting 74% strongly agreed they were better able to manage their care while enrolled in the HBPC practice. In the overall 3 years, the majority (70%) of the respondents strongly agreed that their quality of life was improved

after being enrolled in the HBPC practice. These are total results from the organization's patient care experience tracking, not just for the patients in the sample.

Walden University's mission of promoting social change discusses actions to promote the worth, dignity and development of individuals. This DNP project established the success of a HBPC practice in the care of elder patients with heart failure. Patients had increases in their quality of life and decreased hospital encounters after enrollment in this practice. Vanleerberghe et al. (2017) have revealed that the elder population in the western world wish to remain in their own homes as they age. This concept is known as aging in place, which positively influences an individual's well-being. By providing HBPC, elder patients can maintain their self-worth and dignity that is often lost in a long-term care facility, in turn promoting social change.

Recommendations

The DNP project was a retrospective QI program evaluation which determined that the HBPC program should be expanded to eliminate the waiting list. A CUA, which measures quality and length of life as the primary outcome of interest (McFarland, 2014), was used as part of the QI program evaluation, and determined that the home-based program results in improved QALY. A CBA, which compares costs, was used to analyze admissions, readmissions, and ED visits (Shiell et al., 2002). These analyses were used to evaluate the effectiveness and costs and to address the waiting list, determining the cost effectiveness of hiring another nurse practitioner to decrease the current waiting list and to provide care for more homebound, elder patients.

The mean cost for HF-related hospitalizations for Medicare patients is $14,631 (Kilgore et al., 2017). The average cost for an ER visit is $1,291 (Fitch et al., 2018). These statistics were used to calculate the cost of care in this project. The CBA revealed a hypothetical total cost savings (N = 119, M = of $35,897.85) for FFS Medicare patients in the years 2017 to 2019. This overall savings only accounted for approximately 9% of the HBPC population for the same years. With this considered, there would be a combined estimated savings of $434,752 from 2017 – 2019, thus, providing the additional finances needed to hire a minimum of one additional NP to decrease the waiting list and provide care to more home bound individuals. This recommendation was endorsed to the expert panel and will be reviewed once the COVID pandemic has ended.

Contribution of the Doctoral Project Team

The project team for this DNP project included the HBPC practice leadership who facilitated access to aggregated de-identified project data and provided encouragement and insight during pursuit of this degree. The HBPC embedded performance improvement project manager was vital in collecting the de-identified data for analysis and attaining the patient satisfaction survey results. The health system internal review board (IRB) allowed access to HF patient information, including reporting of HF failure patient data in the aggregate for their ER and hospital admissions and satisfaction survey results. The final recommendations for the project will be reviewed by the project team once the COVID pandemic has ended.

The findings from the DNP project were presented via a power point presentation to the expert panel, which included the HBPC leadership and the performance

improvement project manager. As a participant in the IAH demonstration, the expert panel is interested in reviewing actual patient cost of care data to determine the true cost savings delivered by the HBPC practice. This author will use this data, after completion of the DNP degree, to determine the cost per QALY.

Strengths and Limitations of the Project

This project was a retrospective QI project, program evaluation, which reviewed the effectiveness of care of HF patients in a HBPC practice over time. Strengths of this project included the evidence that supports that HBPC does have a positive effect on elder patients with HF. Limitations of the project included the sample size for both cohorts and the limited time enrolled in the HBPC practice for some TCM patients.

Future studies on the effects of HBPC on patients with HF should have a larger sample size and which can include patients who have died during the study period. Actual cost of care data would also be beneficial. This author did not include this data which may have provided further validity of the CBA.

Section 5: Dissemination Plan

The findings from the DNP project were presented via a power point presentation to the expert panel, which included the HBPC leadership and the performance improvement project manager. All participants were interested in the QALY aspect of the project and wanted to explore this further with actual cost of care data and include a larger patient population to study. The overall decrease in hospital encounters for the TCM group were also discussed. As this project only included 119 Medicare FFS patients, there was also an interest of replicating the project with other insurance payors of the practice to determine the cost-effectiveness for more patients. The final DNP project will be shared with the expert panel once it is submitted to Proquest, as I offered this and the expert panel requested it.

Dissemination plans for this project include publication. Appropriate audiences for this project include nurses, advanced practice nurses, and other health care providers in geriatric or cardiac care. The results can also be distributed to geriatric and cardiac journals in medicine. The HBPC practice often presents posters to geriatric conferences and this project can be submitted as a poster presentation.

Analysis of Self

I began my education in nursing in 1993 as a licensed practical nurse. This was followed by registered nursing degrees in Associates of Science in Nursing and Bachelor of Science in Nursing. I returned to university again to obtain my Masters of Science in Nursing in adult health as a nurse practitioner but, I did not believe I would return to

university for any of my degrees as I was “done with school”. Fast forward 27 years and I am at the culmination of this DNP program.

During this DNP educational endeavor, I finally understand nursing theory and what theory holds to practice. Meleis’ transitions theory can be appropriately applied to this project and my current professional role as an NP in a HBPC practice. This DNP degree has helped me to understand the importance of being present for my patients and their family members and to develop and expand and enhance services to enable a smooth transition to home bound at the end of life.

While enrolled in Walden University, I was offered the opportunity to share my knowledge of the NP role and HBPC with NP students as a preceptor and adjunct faculty member at a local university. The DNP education has helped me prepare for a future role as a leader in the HBPC practice and in the university. I have held managerial roles in the past but I was not prepared for them as I lacked the understanding of what actually went into the role besides ensuring sure my ER ran smoothly, a schedule was done correctly, and my staff was happy. Although I was always told I was a good manager, I feel I would do a better job now.

The completion of the DNP project was lengthy as I had to change course a few times to develop a better project and I experienced personal and professional matters which stalled the completion. I realize now changing course was the correct thing to do. The DNP project reinforced my belief that I work in a successful HBPC practice. Numerous studies have been done in this HBPC practice, but this is the first one to look at the QALY added to patients we touch. Using the QALY helped me to genuinely

understand how my HBPC colleagues and I have a positive effect patients' lives, besides the money saved for the health system and Medicare.

Summary

The common theme of this DNP project was the cost of care for elder patients with FFS Medicare who suffer with HF. This project showcased the effects of HBPC on this population, including decreased hospital encounters and increased quality of life. The results can be applied to any elder patient population. There is an increased need for nursing care and primary care for the homebound, frail elders as the population of the United States ages. Advanced practice nurses have an obligation to develop programs that meet the needs of these patients. Providing care through a home-based program is not only cost effective, it is the right thing to do for patients.

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