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Implementation of a Treatment Plan in a Rural Health Clinic for Patients with a Diagnosis of Migraine Headache

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Dedication

I dedicate this project to my three children, whom I believe sacrificed much more than I ever did throughout the completion of this education and project. Brittney, Brandy, and Michael, your never-wavering love and devotion have been where I have drawn my strength every step of the way through the process. You have laughed, loved, and eye-rolled at so many things, as well as listened to endless hours of recitation of papers just to provide me with a single nod of confirmation that all is well. I love all of you more than I can say, and am the woman I am today because of you. Thank you so much. I love you.
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Abstract

The purpose of this practice dissertation was to improve the quality of care and outcomes for patients in a small, rural health clinic with a diagnosis of migraine headache. The Institute for Clinical Systems Improvement (ICSI) prepared a health care guideline for the diagnosis and treatment of headaches (Beithon et al., 2013). As part of this guideline, aims and measures were provided for the purpose of quality improvement in migraine headache management (Beithon et al., 2013). The guidelines state the purpose of Aim #5 is to, “increase the percentage of patients with migraine headache who have a treatment plan” (Beithon et al., 2013, p.47), which was measured by the overall percentage of patients with treatment plans utilized to manage the diagnosis (Beithon et al., 2013). This quality improvement measure was accomplished through the implementation of a migraine-specific treatment plan (Silberstein, 2000) that is part of the electronic medical record (EMR) for all patients with a migraine diagnosis within the rural health clinic. The patients included in the project had a migraine diagnosis defined by the International Classification of Diseases, 9th Edition (ICD-9) codes 346.0 through 346.93 (Medicode, 1996), and were between the ages of 18 and 65. The goal of this project was to not only make the treatment plan available within the EMR, but also to achieve greater than 80% compliance by the providers in the clinic for the implementation of the individualized treatment plans for each qualified patient. The clinic achieved a 93% implementation rate as 26 out of 29 qualifying patients seen during the 45-day implementation period received a treatment plan during the visit.
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Chapter 1

Introduction

Approximately 324 million people around the world suffer from migraine headaches (Beithon et al., 2013). The mounting costs of over $20 billion annually are directly associated with suffering patients and over-burdened health care systems in the United States alone (American Migraine Foundation [AMF], n.d.; Beithon et al., 2013; Migraine Research Foundation [MRF], n.d.). Migraine headaches impact one in every four households in the United States (MRF, n.d.). For individuals with migraine headaches, the Institute for Clinical Systems Improvement (ICSI) identified aims and measures to improve quality within care delivery systems (Beithon et al., 2013). The purpose of this chapter is to outline the importance of using treatment plans, also known as action plans or self-management plans, for the care and management of patients diagnosed with migraine headaches.

The health care guidelines outlined by ICSI frequently cite research performed by Dr. Stephen Silberstein, a neurologist who has been published 121 times, and cited over 2,000 times by various authors for his research on headache treatment (Beithon et al., 2013; Minnick, 2008). Dr. Silberstein serves as the current director of the Comprehensive Headache Center in Philadelphia, Pennsylvania, and a researcher who has been studying migraine headaches for over 30 years (Minnick, 2008; Thomas Jefferson University, 2014). As far back as the 1990s, treatment plans were identified by Dr. Silberstein as a successful tool used to improve patient outcomes (Kusum, Kumar, Ninan, & Silberstein, 1995).
Silberstein (2004) notes that a fundamental part of caring for a patient with migraine begins with the diagnosis, educating the patient about the diagnosis, and then developing the patient’s individualized treatment plan. Created by the health care provider and the patient, treatment plans allow the patient to self-manage a chronic illness and allow the provider a baseline for comparison of efficacy of the current treatment regimen at each visit. The goal of a treatment plan is to encourage early intervention and to implement or change a healthy behavior (Gibson & Powell, 2004; Handley et al., 2006; Walters, Turnock, Walters, & Wood-Baker, 2010). The plans are a collaborative work that, at a minimum, require the active participation of the patient and the clinician, are based on the concept of person-centered care, and are reviewed at regular intervals (Handley et al., 2006; Lion, Mangione-Smith, & Britto, 2014; Manley, Hills, & Marriot, 2011; Silberstein, 2008).

One of the ICSI measures within the guidelines established for migraine headaches specifically identifies the use of treatment plans as a necessary, evidence-based practice tool in the effective management of migraine headaches to improve patient outcomes (Beithon et al., 2013). Patients can expect the implementation of the ICSI recommended individualized migraine treatment plans by primary care providers.

The requirements set forth by the Meaningful Use Core and Menu Objectives as defined by the Centers for Medicare and Medicaid Services (CMS), stipulates the complete medical record is to be in an electronic format. To comply with CMS, the plans were created to be a part of the electronic medical record (EMR) within Amazing Charts® (“Stage 2 eligible hospital and critical access hospital (CAH) meaningful use core and menu objectives,” 2012). This was done for the purpose of improving health
outcomes and quality of care through clear expectations of migraine treatment and care coordination between the provider, the patient, and emergency treatment personnel (Beithon et al., 2013; Handley et al., 2006; Kusum et al., 1995; Lion et al., 2014).

In an effort to follow the current guidelines, a small rural health clinic, Honor Family Practice (HFP), elected to allow this project to begin the implementation of the treatment plans for patients diagnosed with migraine headaches. The primary objective of this project was to implement a migraine template in the existing EMR of HFP for patients who had an existing or new diagnosis of migraine headache. The task was done to provide increased efficiency and quality of patient care through ease of access and frequent evaluation of the treatment plan (Kusum et al., 1995). The measurable outcome was to achieve an implementation rate of at least 80% of the patients seen within a period of 45 calendar days. A total of 350 patients were seen during the 45-day implementation period. Twenty-eight of the patients had a qualifying migraine diagnosis, and 26 of those patients received a migraine treatment plan by the providers resulting in an implementation rate of 93%.

**Migraine Headaches**

Migraine headaches are one type of familial headache disorder and are generally described as painful and throbbing (Hildreth, Lynm, & Glass, 2009; “Migraine Headache,” 2014; National Institute of Neurological Disorders and Stroke [NINDS], 2001; Silberstein, 2004). Migraine headaches are typically on one side of the head and may progress to additional physical symptoms, such as difficulty speaking, numbness or tingling on one side of the body, anorexia, gastrointestinal symptoms (i.e. nausea or vomiting), and cold-like symptoms including tenderness on the head or neck, nasal
congestion, rhinorrhea, or epiphora ("Migraine Headache," 2014; Silberstein, 2004). Additionally, migraines can be preceded by visual or physical warning signs, commonly described as an aura, that include vision field changes made up of a multitude of colors, a zig-zag pattern, or light variations, excessive yawning, hyperactivity, or even a craving for sweets, to name a few (Hildreth et al., 2009; "Migraine Headache," 2014; NINDS, 2001; Rothrock, 2009; Silberstein, 2004). An aura, impacting only about 25% of all migraine sufferers, precedes the migraine headache and is neurological in nature, often building in intensity before dissipating at the onset of the headache (Rothrock, 2009; Silberstein, 2004). During the resolution phase, the period of time following a migraine, patients will often feel very tired, have difficulty concentrating, scalp tenderness, or mood changes such as feeling depressed or irritable (Silberstein, 2004).

The onset of migraines can be sudden or over time, and will last as briefly as a half an hour or as long as 72 hours or more ("Migraine Headache," 2014). Migraine triggers are individualized in the presentation. Examples of migraine triggers include quick light or motion changes; stress; anxiety; bodily straining; certain smells or foods; ingested chemicals such as caffeine or nitrates; missing meals; weather changes; hormone fluctuations; or unusual physical activity (Beithon et al., 2013; Hildreth et al., 2009; "Migraine Headache," 2014; NINDS, 2001; Silberstein, 2008). Although migraine headaches are exceptionally painful and impact the lives of many patients, migraines are not life-threatening (Hildreth et al., 2009). Migraine headaches are, however, extremely costly to treat when not managed properly (AMF, n.d.; Friedman, Feldon, Holloway, & Fisher, 2009; MRF, n.d.; Munakata et al., 2009; Stewart et al., 2011; World Health Organization [WHO], 2012).
Demographic Information

In the United States, migraine sufferers, representing both males and females with episodic and chronic migraines, total approximately 12% of the population (AMF, n.d.). The age of these individuals typically ranges from the onset of puberty through roughly 45 years of age (AMF, n.d.). The majority of patients diagnosed with migraine headache are women with a lifetime prevalence of approximately 25%, while for men it is nearly 8% (AMF, n.d.; Centers for Disease Control and Prevention [CDC], 2010; MRF, n.d.; WHO, 2012). According to the CDC, individuals between the ages of 18 - 44 years represented approximately 58% of patients who have migraine or severe headaches (CDC, 2010). The smallest age group, males and females age 75 and older, make up only 5% of the patients with migraine headaches, showing a decline in prevalence with age (Schiller, Lucas, & Peregoy, 2012). Other factors associated with higher percentages of individuals with migraine headaches include educational levels below a bachelor’s degree, low income, patients who have Medicaid insurance benefits under the age of 65, and, those with combined Medicare and Medicaid insurance coverage who are over the age of 65 (Schiller et al., 2012).

Societal Burdens

Headache disorders impact a multitude of areas in patient’s lives from the difficulties associated with chronic pain and disability, which results in the long-term damages to quality of life and financial stability (WHO, 2012). Furthermore, the Global Burden of Disease 2010 study showed, based on adjusted life years, migraine accounts for about 1% of all global disability and is the 30th leading cause of disability (Schwedt,
Migraines are the third most common disease in the world, its sufferers make up 14.7% of all populations worldwide, which includes both men and women (Steiner, Stovner, & Birbeck, 2013). The associated costs of migraine headaches are divided between the direct expenses of health care and the indirect expenses impacted by the condition, such as lost wages and productivity (AMF, n.d.; Friedman et al., 2009; MRF, n.d.; Munakata et al., 2009; Schwedt, 2014; Stewart et al., 2011; WHO, 2012). These reported costs are exacerbated by declining health, including frequently acquired comorbidities that develop because of chronic migraine events, such as depression and sleep disturbances (MRF, n.d.; Munakata et al., 2009; Schwedt, 2014; WHO, 2012).

**Direct Expenses.** The United States currently spends in excess of $20 billion annually on migraine treatment in the form of direct expenses (AMF, n.d.; MRF, n.d.; Schwedt, 2014; WHO, 2012). Migraine headaches, specifically, are the most common type of headache disorder seen in primary care and emergency departments (EDs) (Friedman et al., 2009; John Hopkins Medicine, n.d.). Traditionally, patients have been seen at a local ED for acute treatment of a migraine headache. Although “headaches are one of the most challenging problems for emergency physicians” (Evans & Friedman, 2011), based on information gathered from 1992 – 2001, it is estimated that headaches make up 2.2% of all visits to the ED (Goldstein, Camargo, Pelletier, & Edlow, 2006). Although 2.2% may seem like a small percentage of all ED visits, 2.1 million people were included in this category (Evans & Friedman, 2011; Goldstein et al., 2006). When migraine suffers arrive at the ED, physicians are placed in the position of having to diagnose them properly within a tight time line, a high-stress environment full of life-threatening distractions, limited resources, and the concern of possible attempts...
by the patient to obtain pain medications for substance abuse issues (Evans & Friedman, 2011; Friedman et al., 2009). Adding to the complexities are the many possible triggers that lie within the ED to worsen the patient’s headache including bright lights, loud voices, frequent chimes from medical equipment, and a multitude of other environmental irritants (Silberstein, 2004). The key to headache management specifically that of migraine headaches, lies in prevention and proper management which helps to eliminate the cost and complications of the unnecessary costs, pain, and suffering (Beithon et al., 2013a; Latimer, 2013; NINDS, 2001).

*Radiological studies.* In most cases, when a patient presents to the ED, the provider is limited to the small amount of information available as presented by the patient or the family members (Evans & Friedman, 2011; Friedman et al., 2009). This information, combined with the assessment, allow the provider to narrow down the potential cause of the head pain, but may also require additional testing or diagnostic evaluations, such as a computerized tomography (CT) scan or magnetic resonance imaging (MRI). Goldstein, Camargo, Pelletier, and Edlow (2006) found that although imaging was utilized in approximately 14% of the cases, several individuals not imaged were misdiagnosed as having a benign process; “However, 5.5% of those who underwent CT were ultimately diagnosed with a ‘pathological’ process” (p. 6088).

In addition to the costs of the provider assessment in the ED, the diagnostic items such as a CT or MRI are typically very expensive and often unnecessary (Beithon et al., 2013). The John C. Lincoln Health Network in Phoenix, Arizona gathered information from various websites and determined the average cost of a CT of the head and brain without contrast is approximately $777.00 (John C. Lincoln Health Network,
n.d.-a); An MRI of the head and brain is even more expensive, at approximately $1618.00 (John C. Lincoln Health Network, n.d.-b). Although laboratory tests are not typically utilized for the diagnosis of a headache, the systemic differential diagnoses that have to be ruled out do often require lab work for a definitive diagnosis, such as a sinus infection or meningitis (McNamara, 2005). The charges related to these tests can also add to the mounting costs related to diagnosing a headache for both the facility and the patient.

**Indirect Expenses.** Indirect expenses related to chronic migraine, as well as other chronic diseases, are primarily identified as losses in worker productivity related to frequent absenteeism, short or long-term disability, or reduced work output (CDC, n.d.; Stewart et al., 2011). The common term associated with the cost estimates identified by decreased productivity is known as “Lost Productive Time (LPT)” (Bigal, Serrano, Reed, & Lipton, 2008; Stewart et al., 2011). For individuals with a diagnosis of chronic migraine, which is defined as having a migraine “on at least 15 days a month, with at least eight days a month on which their headaches and associated symptoms meet diagnostic criteria for migraine” (Latimer, 2013, p. 1), the LPT is estimated at approximately $1756.00 per person annually. However, for patients who have transformed migraines, a more severe type of chronic migraine that progresses over time and combines migraine and tension headaches, the costs escalate to $7,750.00 per person annually (Munakata et al., 2009).

**Individual Burdens**

Significant individual burdens exist for patients who have chronic migraine headaches. Patients miss opportunities to spend time at family functions; show a
waning ability to complete household chores; have a decreased income due to loss of work; experience emotional declines; and exhibit a negative impact on long-term health (Beithon et al., 2013a; Bigal et al., 2008; CDC, n.d.; Manack, Buse, & Lipton, 2011; Stewart et al., 2011). In addition to reduced wages due to time off work, some patients reported a loss of identity related to termination of employment, or willingness to give up promotions and work advancement opportunities out of fear of not being able to fulfill required job duties and role expectations (Landy, Runken, Bell, Higbie, & Haskins, 2012). Other data indicate that individuals who suffer from migraine headaches are at higher risk of health complications such as ischemic strokes, anxiety, depression, and fatigue (Beithon et al., 2013; Giannini, Cevoli, Sambati, & Cortelli, 2012; Manack et al., 2011).

Need for Change

The Clinic

Benzie County, Michigan, with an estimated population of 17,428 people as of 2013, is home to the rural health clinic that was the site of the proposed project (United States Census Bureau, 2013). The clinic treats primarily a tri-county area made up of Benzie, Manistee, and Wexford Counties, all of which are very rural spanning over approximately 1,400 square miles. At the beginning of the data gathering process, a report generated revealed HFP had 121 patients with a history of one of the identified migraine headache diagnoses being treated within the clinic. Additional evaluation revealed only 78 of those patients were currently active. The clinic did not previously have any formal management plan in place for individuals receiving migraine headache treatment and was unable to evaluate the patient outcomes of the treatment methods.
However, improved quality of care and patient outcomes continues to be of key importance to the owner of HFP, who provided support and strength for the change.

**Effective Change Agent Utilizing the Iowa Model**

Doctor of Nursing Practice projects, as outlined by the American Association of Colleges of Nursing (AACN), serve as “a deliverable of accumulation of knowledge and summative evaluation” (Moran, Burson, & Conrad, 2014, p.70) of the educational process for the Doctor of Nursing Practice (DNP) degree. This is accomplished through a high level of attainment of the understanding of the complexities within the eight Essentials of the DNP as outlined by the AACN (Moran et al., 2014). The key to effective implementation was to successfully marry practice and scholarship, which resulted in the project being both significant and relevant for the improved outcomes of the practice. This was in addition to the advancement of the important role of the DNP-prepared advanced practice nurse (AACN, 2006; Moran et al., 2014).

In the DNP Roadmap Task Force Report, the AACN explained the role of the DNP-prepared nurse is to understand and respect the value of research provided by counterparts who have obtained a PhD in nursing (AACN, 2006). Furthermore, the DNP is to complement the research efforts of PhD-prepared peers by expediting the implementation of needed change to improve patient outcomes based on evidence-based practice (EBP) and performing system improvements.

The Iowa Model of EBP created by Marita G. Titler, PhD, was developed for the purpose of providing a systematic way of implementing research into practice (Titler, 2008). The Iowa Model is made up of seven steps, of which the first four are selecting a topic, planning, research, and grading the evidence, while the final three involve
determining the outline of the treatment plan to meet an expected standard, implementation, and evaluation (Titler, 2008). As shown in Figure 1, the project implementation plan was developed using these 7 steps of the Iowa Model.

Titler (2008) explains the model begins with the identification of a trigger, which she describes as being that of a problem-focus or a knowledge-focus. The problem-focus trigger is typically that of an identified clinic or facility problem. A knowledge-focus trigger is based on a new guideline or recommendation that is discovered through efforts to increase knowledge (Titler, 2008).

During the DNP educational journey, the discovery of the ICSI guideline for improvement in the management of migraines by utilizing treatment plans became the knowledge-focused trigger (Beithon...
et al., 2013). The driving question for the project, completed during Step 1 of the Iowa Model, involved finding out if HFP had a tool in place to manage migraine headache treatment to ensure improved patient outcomes. If the clinic did not, the additional question became, would treatment plans be a viable option to fill the need?

Based on Step 2 of the Iowa Model, a thorough search and review of the literature was performed. Adequate evidence existed to support the guideline outlining the implementation of treatment plans for improving outcomes among patients diagnosed with migraine headaches. The evaluated literature included research considered to be at a higher level of strength including systematic reviews and randomized control trials (RCTs). Step 3 required an evaluation of whether or not the evidence and literature answered the question developed in Step 1. Key research identified as strong evidence in Step 4 confirmed treatment plans would be a viable option to manage migraine headache treatment and improve outcomes (Titler, 2008).

As an example of these steps, the ICSI-prepared health care guideline for the diagnosis and treatment of headaches is based on EBPs (Beithon et al., 2013). As part of this guideline, aims and measures were provided to guide quality improvement in migraine headache management (Beithon et al., 2013). The purpose of Aim #5, as outlined in the ICSI guidelines, is to “increase the percentage of patients with migraine headache who have a treatment plan” (Beithon et al., 2013), ultimately creating an improvement in functional status (Beithon et al., 2013). Additionally, multiple studies showed personal and financial costs, as well as a worsening of the patient’s condition, can be reduced in as much as 66% for patients through proper management with treatment plans (Handley et al., 2006; Latimer, 2013; Silberstein, 2000; Silberstein,
Goadsby, & Lipton, 2000;). Although the research was often performed with larger samples and in larger facilities, the treatment plan is an individualized tool that can be generalized across all sample sizes and health care environments. However, the plans must be developed in the specific EMR software format utilized by individual facilities.

It is important to note that Aim #5 of the ICSI guidelines does not define an implementation percentage rate that is considered acceptable, but only explains there must be “an increase” in the total patient percentage with treatment plans (Beithon et al., 2013). For the purpose of this project, the Pareto Principle was utilized to establish a minimum number of patients to be included that would represent 20% of all qualifying patients.

Pareto was a systems theorist during the twentieth century who believed in the use of theory generalizations to guide applied work (McLure, 2001). The principle, also known as the “80/20 rule”, represents the theory that 20 percent of the patients can represent approximately 80 percent of the results (Reh, n.d.). Consequently, when combined with the convention that 80% is considered an acceptable level of power, the use of 20 percent of the patients and 80% implementation rates would correlate to a p-value of less than 5%, which is considered statistically significant (Triola & Triola, 2006).

**Conclusion**

“Evidence-based practice is the conscientious and judicious use of current best evidence in conjunction with clinical expertise and patient values to guide health care decisions” (Titler, 2008, p. 1-113). Not only does the best evidence show the improved outcomes for patients who utilize a treatment plan for management of a migraine
diagnosis, but the use is outlined as a current recommendation by the Agency for Healthcare Research and Quality (AHRQ) and the ICSI (AHRQ, 2012; AHRQ, 2013a; AHRQ, 2013b; Beithon et al., 2013). The implementation of the treatment plans for patients who suffer from migraine headaches was significant and relevant as an EBP. Utilization of the individualized treatment plan improves the quality of life for migraine sufferers; decreases indirect and direct expenses; benefits healthcare systems through decreased service utilization resulting in cost savings; and relieves some of the societal burden of migraine headaches (AHRQ, 2012; AHRQ, 2013a; AHRQ, 2013b; Beithon et al., 2013; Giannini et al., 2012; Latimer, 2013; Lion et al., 2014; NINDS, 2001; Schwedt, 2014). These improvements are all accomplished while maintaining a patient-centered approach (Handley et al., 2006; Hills, Manley, & Marriot, 2011; Lion et al., 2014; Manley et al., 2011). Consequently, implementation of a treatment plan in the EMR of a rural health practice setting for patients who have a migraine diagnosis was an excellent example of the effectiveness of the DNP utilizing EBPs to improve patient outcomes.
Chapter 2

Integrative Review

The purpose of Chapter 2 is to provide a literature review of the evidence and recommendations currently outlined related to the implementation of this scholarly project. The goal of this literature review was to identify the efficacy of an individualized treatment plan as an evidence-based method to improve the outcomes of individuals with a diagnosis of migraine headache in a small rural health clinic. Search methodologies, appraisal of quality, and relevant themes will be reviewed. Literature and other documentation supports the use of personalized migraine treatment plans as an effective, evidence-based treatment intervention that should be implemented in the rural health clinic based on the current guidelines as outlined by AHRQ and ICSI.

Guidelines and Recommendations

The highest level of evidence that provides the foundation for this scholarly project was that provided by the AHRQ, ICSI, the NINDS, as well as the work of Dr. Silberstein (AHRQ, 2012; Beithon et al., 2013; NINDS, 2001; Silberstein, 2000; Silberstein, 2008; Silberstein et al., 2007; Silberstein, Goadsby, & Lipton, 2000). In 2000, Dr. Silberstein explicitly identified treatment plans as the most successful practice parameter in the management of migraine headaches (Silberstein, 2000). Since that time, AHRQ, ICSI, and NINDS have now created formal guidelines and recommendations outlining the use of treatment plans for the management of migraine headaches to prevent frequent exacerbations and improve outcomes (AHRQ, 2012; Beithon et al., 2013; NINDS, 2001).
Search Methods

Multiple databases were utilized to identify pertinent and relevant literature related to this project, including Cumulative Index for Nursing and Allied Health Literature (CINAHL, 1982-2014), PubMed, ProQuest, Google Scholar, ScienceDirect, and Essential Evidence Plus. The literature was gathered from 2012 to 2014. All searches were limited to literature published from 2000 to present, written in English, and containing at least one of the following key words or phrases: migraine; headache; utilization review; emergency services; emergency department; guideline; treatment; diagnosis; chronic migraine; societal burden; economic burden; headache disorders; plan; treatment plan; action plan; plan development; risk factor; person-centered care; self-management plan; and cost.

Quality Appraisal

“Systematic inquiry in the form of research produces the most dependable knowledge upon which to base practice” (Melnyk & Fineout-Overholt, 2011, Kindle location 2897 of 20237). All of the literature was ranked based on the Hierarchy of Evidence as defined by Melnyk & Fineout-Overholt (2011), and the strength of the evidence was based on the AHRQ’s recommended domains of quality, quantity, and consistency. There were no specific limitations placed on the literature during the search process. Two themes related to the implementation of this project were identified based on the literature: the efficacy of treatment plans in health care and treatment plan efficacy in specific chronic illnesses.

Treatment plans have been created in a variety of ways with an assortment of components. Research containing utilization of the same treatment plan was not
available for migraine headaches. Consequently, research was collected looking at how effective treatment plans have been in a variety of settings and how effective treatment plans are within the umbrella of chronic illness.

**Relevant Themes**

**The Efficacy of Treatment Plans in General**

Handley et al. (2006) performed a descriptive study by enlisting 43 clinicians in eight primary care practice settings to evaluate the effectiveness of treatment plans on changes to healthy behaviors. The researchers looked at the plausibility of creating treatment plans during a primary care visit, the type of plan that could be created, the reported follow-through with the plan by the patient after 3 weeks, and whether or not certain characteristics of the patient could be identified that determine the success or failure of the plan (Handley et al., 2006).

Of the 375 patients asked to enroll in the study, only 274 were eligible and willing to participate. The sample of patients included in the study had at least one risk factor for coronary heart disease, were English-speaking, and were over the age of 18. The sample was not limited by race or ethnicity. Prior to meeting with the clinician to develop the treatment plan, the patients were interviewed by research assistants to collect information on “their demographic background, health status, recent health behaviors, stage of change/motivation to change behaviors, and self-efficacy regarding health-related behaviors” (Handley et al., 2006, p. 226). The 2002 Behavioral Risk Factor Surveillance System survey was used for the demographic, health status, and recent health behavior measures. The willingness to change was evaluated based on the Transtheoretical Model developed by Dr. James O. Prochaska. The likelihood of
use of the treatment plan by the patient was self-reported and measured using a scale from 0 to 10 (10 being highest), and based on self-efficacy in the areas of health, diet, exercise, worry, health, stress, and overall confidence (Handley et al., 2006).

When meeting with the clinician, the patients were encouraged to identify one healthy behavior change that could be implemented with a treatment plan to improve the patient’s congestive heart failure. The patient was offered a treatment plan that would be an on-going plan or a one-time intervention. The categories representing all of the developed treatment plans included exercise (18%); diet (30%); combined diet and exercise (4%); medications (7%); smoking (8%); stress (4%); and other (9%, i.e. appointments, socialization) (Handley et al., 2006).

For the patients who created a treatment plan (83% of all participants, \( n = 228 \)), the research assistants contacted 195 of the patients three weeks after the plan was created to determine if the patient remembered making the plan. Of the 92% that confirmed the recollection, the researcher would ask if the patient remembered the details of the plan, whether the patient was currently using the plan, and whether or not the patient found the plan beneficial (Handley et al., 2006).

The outcome at 3-weeks following the initiation of the treatment plan found that approximately 53% of the individuals had successfully implemented a healthy behavior due to the treatment plan (Handley et al., 2006). These calculations were based on unadjusted results for accuracy. The researchers did not find a significant statistical difference in the use or success of action plans among patients of varying degrees within the stages of change, self-efficacy, or background. One finding showed patients who used an on-going treatment plan, as opposed to a one-time use plan, had greater
success, but the findings were just above statistically significant (81% versus 66%, \( p = .06 \)). It is important to note, this study was limited in that it did not look at the long-term outcomes related to the implementation of the treatment plan (Handley et al., 2006).

When evaluating the implementation of the treatment plans, Handley et al. (2006) provided the patients in the study an opportunity to choose the healthy behavior. The findings by Handley et al. (2006) support the on-going use and frequent evaluation of the treatment plan being placed in the patient’s chart. They should be reviewed at each visit with the patient for improved long-term outcomes.

Lion et al. (2014) performed a systematic literature review of various peer-reviewed studies that focused on the short- and long-term outcomes resulting from the use of treatment plans in chronically ill patients, which are referred to in the article as an “individualized plan of care (IPC)”. The literature was published between January of 2001 and October of 2011. The review was inclusive of plans developed by providers for patients, providers with input from patients, and plans developed by nurses or care coordinators with patients or family members of children (Lion et al., 2014).

In the discussion, Lion et al. (2014) noted it is important for the success of the plan that the specific target goal be clearly identified and plan collaboration continue between the patient and the provider on a continual basis. Significant evidence was reviewed showing the effectiveness of treatment plans in a variety of situations with both adults and children. No studies were found that compared the use of a treatment plan to another intervention (Lion et al., 2014).

Of the 15 full-text articles included in the review that met the evaluation parameters, treatment plans utilizing a team collaboration approach were used and
were all found to be effective in some aspect of improved outcomes for the patients. The improvements were in a variety of areas, such as reduction in the use of the emergency department; a reduction in out-patient office visit frequency; increased satisfaction with care; increased self-management of care; decreased hospitalizations; increased quality of life; increased adherence to medications to treat chronic illness; improved functional status; and improved laboratory markers. The research lacked specific information on the type and development of the treatment plans used to accomplish the improved outcomes.

Landy et al. (2012) performed a combined longitudinal and cross-sectional study to evaluate the impact of the onset of treatment on the patient’s ability to return to normal functioning. A prospective, web-based, observational study was performed to collect self-reported information from adults over the age of 18 in the United States with a provider diagnosis of migraine headache with or without aura. Additional criteria included having a full-time job over 30 hours a week; experiencing a migraine headache an average of 2 to 8 times per month over the previous 6 months without exceeding 15 headache days in a month; and taking a medication to treat the acute onset of a migraine headache (Landy et al., 2012).

An online company was used to conduct the survey and gather a panel of respondents. Information was gathered from the participants in the first of two surveys and included demographics, and a migraine history, including frequency, severity, and functional impacts. Information regarding the three migraines following the respondent’s baseline survey was also collected, such as time of onset severity,
treatment, and impact on work productivity. The information was placed in an online diary survey for the 48 hours following the onset of each migraine (Landy et al., 2012).

Statistical analysis utilized weighted data. Demographic and propensity score weighting (a method used for estimating treatment effect in observational research) were used to represent the migraine population in the United States. Participants were found to be slightly more educated and more likely to be Caucasian than the general population. Descriptive statistics were performed to examine the data from the 509 respondents. Respondents were 41 years of age ($SD = 10.0$) on average, mostly female (75%) and Caucasian (82%). A total of 1,527 migraine episodes were recorded, with the average number in a month being 3.6 migraines ($SD = 1.9$) lasting over an average of 6.4 migraine days ($SD = 3.1$). Migraine duration lasted from less than one hour to over 48 hours. The researchers discovered that treatment delays occurred in migraine headaches that had an onset between 11 P.M. and 4 A.M. 37% of the time, while migraines with an onset between 6 P.M. and 10 P.M. were treated within an hour 73% of the time. Migraines with an onset during work hours were the headaches treated least often. The primary reasons identified for the delay in treatment was lack of medication on-hand (26%), cost of medication (31%), and dislike of taking medication (25%) (Landy et al., 2012).

The study revealed a wide variety in treatment paths reported by the respondents without a treatment plan. Although the treatment guidelines suggest use of a triptan, several respondents reported starting with an over-the-counter (OTC) product and more frequently required the use of a rescue medication (39% vs 69%, $p < .05$). The respondents who reported using the triptan at the onset of the headache instead of an
OTC medication, experienced faster resolution of the migraine within the first hour (76% vs 61%, \( p < .05 \)), and showed shorter duration of 7.8 hours \( (SD = 8.0) \) on average, compared to those treated with an OTC medication. Migraines treated with an OTC medication lasted 11.4 hours \( (SD = 9.4) \) on average (Landy et al., 2012).

The findings of this study show the importance of a clear treatment regimen for the patient and the value of a clearly written treatment plan. Educating the patient on the importance of initiating treatment within one hour of the onset of the migraine with a triptan to decrease duration is critical (9.1 hours vs 12.3 hours, \( p < .05 \)). Patients who understood the directions related to proper treatment of the migraine headache used medications in a timelier manner. Prompt treatment resulted in decreased pain and suffering resulting from a reduction in the duration of the migraine episode, as well as fewer subsequent medications being used. Providing the tools necessary to assist the patient with the management of a migraine is necessary for improving the patient’s outcomes and decreasing the impact on overall functioning (Landy et al., 2012).

The implementation at HFP varies from Landy et al. (2012) in that there was not a large team approach. The plans at HFP were implemented in the primary care setting, similar to that of Handley et al. (2006). The treatment plan was created by the practitioner and the patient, with subsequent follow-up visits providing the opportunity for the plan to be evaluated. Lion et al. (2014) showed the value of treatment plans, but was unclear in the plan delivery and did not provide the length of evaluation intervals of all of the studies (Landy et al., 2012).

In an RCT with adults, when using treatment plans and a care team, Counsell et al. (2007) obtained significantly better outcomes related to fewer ED visits and
hospitalizations of 951 low-income seniors at high risk of hospitalization. The control group included 477 patients, while the intervention group had 474 patients. The intervention involved the creation and monitoring of an individualized treatment plan by a care delivery team made up of an advanced practice nurse and a social worker who worked collaboratively with the patient’s primary care provider and a geriatrics interdisciplinary team led by a geriatrician. The study was conducted over a two-year period, and was monitored primary by the nurse practitioner and the social worker on the care team. Annual reassessments were performed (Counsell et al., 2007).

The findings were significant in the intervention group for fewer ED visits overall (1,445 vs. 1,748 per 1,000, $p = .03$), fewer hospitalizations in a pre-determined sub-set group of high-risk patients (396 vs. 705 per 1,000, $p = .03$), and four out of eight survey measures. The four survey measures that improved were general health, vitality, social functioning, and mental health ($p < .05$ each). The group, overall, did not show a decrease in hospitalizations or mortality, or a change in functional ability with activities of daily living, exhibiting benefits to treatment plan implementation. However, it is difficult to assess in this study whether the improvements were due to the team approach or the treatment plan (Counsell et al., 2007).

Overall, patients in these studies did better with a treatment plan, which supports the need for the implementation project. The use of treatment plans will be beneficial for HFP because the plans provide clear direction for the patients Counsell et al. (2007), Handley et al. (2006), Landy et al. (2012), and Lion et al. (2014) found patients with the plan were more successful in modifying behaviors to improve health because of being given these clear instructions.
Treatment Plan Efficacy for Chronic Illness

Treatment plans are used for the purpose of “assisting patients to improve health-related behaviors” (Handley et al., 2006, p. 224), which is possible through prevention efforts (Bigal et al., 2008; Manack et al., 2011; Munakata et al., 2009). Three research articles were identified as validating the success of treatment plans for the use of preventative care and improved outcomes in specific chronic illnesses (Gibson & Powell, 2004; Katon et al., 2001; Walters et al., 2010).

In 2001, Katon et al. (2001) studied 386 adults with major depression that was controlled at the time of the study. Of the sample, 194 participated in the intervention and 192 were controls. The intervention involved a depression specialist performing two visits to prepare an individualized treatment plan for prevention of relapse. Medication refill monitoring and three follow-up phone calls were included as part of the intervention as well. Several significant findings were identified following the intervention, including increased adherence to obtaining antidepressant medication refills ($OR = 1.91, p < .001$), adequate antidepressant dosages ($OR = 2.08, p < .001$), and lower depression symptoms scores over time (difference 0.08 points, $p = .04$). However, no differences in relapse frequency were identified (Lion et al., 2014).

The Katon et al. (2001) study was limited to the Northwest region of the United States and only included employed individuals with some college education. The literacy aspect may be an issue with the patients at HFP, as many of the patients are at or below poverty level and very few have a college education.

Written treatment plans used for patients with an asthma diagnosis were evaluated in a meta-analysis by Gibson and Powell (2004). Seventeen RCTs were the
only studies to meet the criteria of inclusion and compared the use of treatment plans against typical care delivery. All 17 RCTs had to have completed, individualized action plans which required each plan to contain four key components: (a) when to increase treatment; (b) how to increase treatment; (c) for how long; and (d) when to seek medical help. The review revealed the studies with the treatment plan that measured success based on a specific measuring point set by the patient’s previous personal best peak expiratory flow, showed consistently improved outcomes. When compared to the results for plans that had the patient compare success to an estimate of where the patient is expected to be, the patients responded better to working toward beating their own personal best. However, all 17 studies reported improved patient outcomes when using the treatment plans in asthma (Gibson & Powell, 2004).

A meta-analysis performed to evaluate the effectiveness of the implementation of treatment plans in patients with chronic obstructive pulmonary disease (COPD) was performed by Walters et al. (2010). The reviewers evaluated five RCTs, excluding cross-over trials. All participants had a diagnosis of COPD and a history of smoking. All patients with a primary diagnosis of asthma were excluded. The reviewers searched for articles on three separate occasions in 2006, 2008, and 2009. The RCTs included studies that implemented a treatment plan only, while others used the treatment plan in addition to an education session with a nurse. After statistical analysis, the pooled studies showed an improvement in medication usage of oral corticosteroids ($MD = 0.74, 95\% CI [0.14 to 1.35]$) and antibiotics ($OR = 1.65, 95\% CI [1.01 to 2.69]$) for acute exacerbations over 12 months. One study showed an improvement in general mental
health, while another revealed an increase in knowledge related to self-management (Walters et al., 2010).

**Summary**

Silberstein (2000) identified the long-term treatment goals for migraine headache are to:

- Reduce attack frequency, severity, and disability;
- Reduce reliance on poorly tolerated, ineffective, or unwanted acute pharmacotherapies;
- Improve quality of life;
- Avoid acute headache medication escalation;
- Educate and enable patients to manage their disease to enhance personal control of their migraine;
- Reduce headache-related distress and psychological symptoms (Silberstein, 2000, p. 756).

A thorough review of the literature identified the benefits related to the use of a treatment plan for the long-term management of migraine headaches. Several studies have shown treatment plans improve medication adherence and decrease frequency of exacerbations related to a chronic illness, such as with migraine headaches (Counsell et al., 2007; Gibson & Powell, 2004; Handley et al., 2006; Katon et al., 2001; Landy et al., 2012; Lion et al., 2014; Silberstein, 2000; Walters et al., 2010). Treatment plans are an effective tool because of the clearly written instructions providing the patient with an opportunity to self-manage care resulting in improved quality of life and better outcomes with headaches (Counsell et al., 2007; Gibson & Powell, 2004; Handley et al., 2006;
Katon et al., 2001; Landy et al., 2012; Lion et al., 2014; Silberstein, 2000; Walters et al., 2010).
Chapter Three

Conceptual Framework

Theory provides the foundational concepts upon which a project and the subsequent implementation are designed. This chapter will review the two theories utilized for this project. The first is Donabedian’s theoretical framework that directed the implementation of an evidence-based intervention at HFP to improve patient outcomes (Donabedian, 1997). The second is the Theory of Planned Behavior, which is the basis for the use of a treatment plan for patients who have a diagnosis of migraine headache, allowing patients to be knowledgeable and intentional in their health care and migraine management (Ajzen, 1991).

**Donabedian’s Theoretical Framework**

Donabedian’s theoretical framework establishes a framework by which the implementation of quality care improvements can be done. Donabedian (1997) explains, “good structure increases the likelihood of good process, and good process increases the likelihood of good outcome” (p. 1745). Donabedian (1997) identified three categories to his framework: structure, process, and outcome.

**Structure**

Structure refers to how the care is organized related to financial resources and practices, staffing, physical location, and quality review practices (Donabedian, 1997). When considering the rural health clinic where the project was to be implemented, and delineating the structural components as Donabedian (1997) outlined, there are three components to structure: material resources, human resources, and organizational structure. Material resources included the building located in a rural area; the electronic
health record; all computer equipment and other forms of office equipment and supplies; and financial reserves (Donabedian, 1997). The human resources included the secretary, and the two nurse practitioners. In this case, one of them was also the owner. Organizationally, the rural health clinic possessed a pre-bureaucratic structure with the owner being centrally located at the apex of all decision-making (Boundless, 2014).

**Process**

Donabedian (1997) describes the process as, “what is actually done in giving and receiving care” (p. 1745). During the process, the provider and patient have an interchange that begins with the patient seeking care. The provider then evaluates the patient, makes a diagnosis, and provides recommendations for treatment. The patient then completes the process, in the best-case scenario, by following the recommendations of the provider to improve the patient’s outcomes. Consequently, the process category is where this evidence-based project was implemented to improve outcomes for patients who suffer from migraine headaches.

**Outcomes**

The outcome is the result derived from the use of structures to implement process change. Donabedian (1997) identified improved outcomes as an expansion of the patient’s knowledge base leading to beneficial behaviors that improve health. The overall goal of this project implementation was to utilize the current structure to implement a cost-effective process change. A treatment plan was to be used for migraine sufferers that, if utilized properly by the patient, would decrease severity and
frequency of migraines; yielding improved patient outcomes as supported by the evidence-based guidelines (AHRQ, 2012, 2013b; Beithon et al., 2013).

**Theory of Planned Behavior**

The Theory of Planned Behavior (TPB) was utilized for the implementation of the migraine headache template within the EMR (Ajzen, 1991). Rhoades et al. (2011) identified that the “central tenet of the theory is behavioral intention, which is a person’s motivation to engage in a specific behavior” (p. 563). The use of the template allows the provider to deliver clearly written treatment recommendations within a treatment plan for improved management of the patient’s migraine headache diagnosis. Icek Ajzen, the creator of the TPB, identified five major concepts to his theory: attitude toward the behavior, subjective norm, perceived behavioral control, intention, and behavior (Ajzen, 2006). Beliefs are a fundamental underpinning to the attitudes and norms developed within this theory (Ajzen, 1991).

**Concepts**

**Attitude toward the behavior.** Ajzen (1991) explains that attitude may be valued positively or negatively by a person. Attitude is driven by the individual’s beliefs developed over time and through experience. The person’s behavioral beliefs also contribute to attitude and are evidenced by beliefs regarding whether the task is possible or if the outcome is worth the effort (Ajzen, 1991). Simply defined, “behavioral beliefs link the behavior of interest to expected outcomes” (Ajzen, 2006, action box titled "Attitudes toward the Behavior").

In spite of resistance by many physicians and legislators that have debated the issue of nurse practitioners being able to practice to the fullest extent of their licensure,
the clinic’s sole owner, Ellen Heit, FNP, accepted the varying views and opinions. The attitude expressed at HFP is one of possibility. Ms. Heit’s personal belief is that things are possible and can be done, which is exemplified by her willingness and tenacity to own HFP and her drive to provide excellent care. This attitude of possibility translates into the belief that the implementation of treatment plans could be accomplished.

**Subjective Norm.** Subjective norm is “the perceived social pressure to engage or not to engage in a behavior” (Ajzen, 2006, action box titled "Subjective Norm"). The perception is coupled with normative beliefs which are related to how the individual believes others will pass judgment if the choice is to engage in the behavior (Ajzen, 2006).

Concerning the implementation of the treatment plans, the social pressure surrounding health care is one of following treatment guidelines that are evidence-based. Although a small practice, the staff strive to provide the best quality care for the patients. Because the pressure to implement evidence-based practices coincides with their quality standards, the staff involved were very accepting of the implementation of the treatment plan for improved outcomes.

**Perceived Behavioral Control.** Perceived behavioral control simply represents the person’s perception of the ability to perform the behavior. These perceptions are driven by the control beliefs, which are those things believed by the person to help or hinder the success of the behavior (Ajzen, 2006).

The area of perceived behavioral control is where the greatest amount of support was required. Ms. Heit and the staff are involved in learning more about the EMR program every business day. However, the clinic’s nurse practitioners readily admitted
to struggles with technology. Encouraging the practitioners regarding their ability to implement the treatment plan due to the simplicity, coupled with being available for questions and support, was required for a successful implementation.

**Intention.** Ajzen (2006) defined intention as, “an indication of a person’s readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior” (action box titled “Intention”). Intention is drawn from the culmination of the attitude toward the behavior, the subjective norm, and the perceived behavioral control, all of which are foundational and driven by the beliefs and experiences of the person performing the behavior (Ajzen, 2006). Despite concerns related to the perceived behavioral control over struggles with technology, Ms. Heit intended to have the treatment plans implemented for all of the patients at HFP.

**Behavior.** Ultimately, the behavior is the outcome that has culminated as a result of the attitude, subjective norm, perceived behavioral control, and intention (Ajzen, 2006). Ajzen (2006) explains that behavior is something that can be observed and has a clear purpose. Specifically, behavior is defined as, “the manifest, observable response in a given situation with respect to a given target” (Ajzen, 2006, action box titled “Behavior”). For the purpose of this project, the observable response was the implementation of the treatment plan by the providers that was validated by presentation within the patient charts.
Chapter Four
Methodology

The quality improvement project was accomplished through the implementation of a migraine-specific treatment plan that is part of the EMR, as measured by the quality standard set forth by the Institute for Clinical Systems Improvement (AHRQ, 2013a; Beithon et al., 2013). The project was guided by the Donabedian framework, while the implementation behavior of the providers was based on the TPB (Ajzen, 1991; Ajzen, 2006; Donabedian, 1997).

All patients with a migraine diagnosis within the rural health clinic that were seen within a 45-day implementation period were included. It was planned that in the event 20 patients had not been seen with a qualifying diagnosis within the 45-day implementation period scheduled, the project would have continued until 20 qualifying patients had been seen. The migraine diagnosis was defined by the International Classification of Diseases, 9th Edition (ICD-9) codes 346.0 through 346.93 (Medicode [Firm], n.d.). The qualifying patients were inclusive of all adults, ages 18 to 65 years old. It was the goal of this project to not only make the treatment plan available within the EMR, but also to achieve greater than 80% compliance collectively by the providers in the clinic for the implementation of the individualized treatment plans for each qualified patient.

Design Phase

During the design phase of the project, a meeting was held with Ms. Heit, the owner of HFP. Donabedian (1997) identified the first category of his framework as structure. One of the reasons for the meeting was to evaluate and confirm adequate
resources were available and the organizational structure was supportive of change with a willingness to participate (Ajzen, 1991; Donabedian, 1997).

Because Ms. Heit is very focused on improving outcomes for the patients in the practice, the decision was made for a project that would implement an EBP that is not currently in place at the clinic. Interest in the treatment and management of migraine headaches was discussed. Current evidence related to the implementation of treatment plans was presented. The implementation of a migraine treatment plan within the EMR for patients with the diagnosis of migraine headache was approved.

Based on the TPB, evaluation of attitudes of the staff regarding participation in the chosen project was important to determine if the project would be viewed as positive and possible (Ajzen, 1991; Ajzen, 2006). Having all of the staff exhibiting a positive attitude toward the project increased the probability the social norm would be that of encouragement to participate (Ajzen, 1991; Ajzen, 2006). The staff unanimously agreed the project was important to improve patient outcomes and possible to implement based on the proposed implementation plan. According to Ajzen (2006), the perceived behavioral control by the staff over the implementation of this project was that it was plausible.

**Individualized Plans**

To foster the highest level of self-management by the patient, the migraine treatment plan template was developed in coordination with the primary care provider to meet the individualized needs of the patient (Handley et al., 2006; Silberstein, 2000; Silberstein et al., 2000). The treatment plan template outlined the patient's preventative treatments, rescue medications, and non-medicinal therapies to be used before and
during the acute onset of a migraine headache, as well as the agreed upon plan to be executed by the patient in the event the rescue treatments are not effective (Silberstein, 2000; Silberstein et al., 2000). The design incorporated the components including when to administer or increase the patient’s medication, how long to wait until next administration, if needed, and when to contact the provider with coordination related to an ED visit (Gibson & Powell, 2004). This plan offered the primary care provider an opportunity to notify the ED provider with the history of the patient, as well as the treatment modalities that have worked well for the patient in the past to assist with prevention of unnecessary suffering and expense (Silberstein, 2000; Silberstein et al., 2000). The information outlined in the template was based on the recommendations of the ICSI and AHRQ, and other general migraine treatment plan examples (AHRQ, 2012; AHRQ, 2013a; AHRQ, 2013b; Beithon et al., 2013).

**Electronic Medical Record**

The rural clinic utilized Amazing Charts® as the only EMR system, a fundamental part of the structure (Donabedian, 1997). Within this system, there is flexibility to create and insert templates in many areas within the office visit note (Amazing Charts®, n.d.a). This flexibility provided the avenue through which the migraine treatment plan template was added to the EMR system for easy access and utilization by the providers. Although there was not a cost to insert these templates, the software system configuration did not allow the information in the ‘plan’ section to be imported forward from the last visit. Consequently, a barrier that had to be overcome was determining how to save time and money by having the plan automatically inserted by the EMR system to prevent the practitioner from having to enter all of the data at each visit.
Implementation Timeline

The process, encompassing all aspects of the implementation, satisfies the second category in Donabedian’s framework (1997). The template was completed by December 15, 2014, allowing time for three random charts to be selected and tested for ease of implementation and functionality of the treatment plan. Once the migraine treatment plan template was successfully created, entered into the Amazing Charts® system, and tested for usability, the practitioners had access and were able to insert the blank template into any qualified patient’s visit note. Qualifying patients were identified by diagnosis codes.

Prior to January 5, 2015, both providers received an education session on the location of the template. In addition, each was asked to return the demonstration of how to insert the template into the file. A reminder session was done the day of implementation. The process of returning the demonstration served two primary purposes: to educate the provider on the process of implementation, and to eliminate any negative beliefs or concerns the provider might possess regarding readiness to implement the plan (Ajzen, 1991; Ajzen, 2006). The trained providers started the implementation of the migraine template on January 5, 2015. The implementation period continued through the end of the workday on February 18, 2015, representing the 45th calendar day of implementation.

Evaluation

Prior to the implementation period, a report was extracted from the Amazing Charts® system identifying all patients meeting criteria based on the selected diagnosis codes, age group, and dates of service. The patients were assigned a project code to
ensure confidentiality. The master list containing the patient names and assigned codes was stored within HFP, along with all data obtained during the project.

Beithon et al. (2013) explained that Aim #5 of the ICSI guidelines for the diagnosis and treatment of headache is to be measured by the overall percentage of patients with treatment plans utilized to manage the diagnosis. This interpretation was later adopted as a guideline by AHRQ (AHRQ, 2013a). Therefore, for this project, a chart review was performed for each clinical day to evaluate if the treatment plans were entered by the providers for each of the patients seen and identified as a qualified participant within the report. The percentage of compliance was calculated based on the number of patients with a qualifying migraine diagnosis code who received a treatment plan during the project timeline divided by the total number of patients with a qualifying migraine diagnosis code seen by the providers during the selected 45-day period. The outcome of the project was evaluated as a percentage format, which represents the success of the implementation of change as outlined by Donabedian (1997).

A secondary goal was evaluated because 100% compliance was not achieved. This was done to determine individual provider implementation rates for the template. Because one provider had less than an 80% success rate of implementation, additional education was provided and discussion ensued allowing for the discovery of project deficits that needed to be addressed for improvement in future implementation projects.
Chapter 5

Results

The quality improvement project was to be accomplished through the implementation of a migraine-specific treatment plan as part of the EMR for qualifying patients with a migraine headache diagnosis. This project was defined by treatment guidelines as set forth by ICSI (AHRQ, 2013a; Beithon et al., 2013). The project was guided by the Donabedian framework, while the implementation behavior of the providers was interpreted using the TPB (Ajzen, 1991; Ajzen, 2006; Donabedian, 1997).

In Preparation

Report

To clearly identify all patients being seen at HFP with a qualifying diagnosis of migraine headache, a report was run within Amazing Charts® using specific parameters (diagnosis = 346.*, patient date of office visit > 01/01/2014). These parameters ensured that only the patients who had been seen after January 1, 2014 with a qualifying diagnosis would be included in the report. The original report identified 75 patients who met the query parameters. The report was then reviewed with Ms. Heit to exclude any clients who had been discharged from the facility or were deceased, but not updated as discharged in the system. One patient was identified as deceased, and 4 patients had been discharged from the clinic. All of the patients remaining on this list, 70 in total, were then assigned individual identifiers to prevent any breach of confidentiality of personal information. All new patients with a qualifying diagnosis seen after the report was run were added and an identifier was assigned. The final number of patients identified as patients of HFP with a qualifying diagnosis during the implementation
period was 78. The list of the patients was stored at HFP in a file within the medical assistant’s file room to maintain confidentiality of all patients. Additionally, the documents were uploaded to a file on the main computer system for HFP to be utilized in the event the paper copy was accidentally destroyed.

**Verification of sample size**

To confirm that at least 20 qualifying patients was sufficient to represent the patient population, the Pareto Principle was applied to the total number of patients at HFP who were identified in the report as qualifying for the project. Consequently, the total number of 79 patients was multiplied times 20%, which gave a result of 16 patients. Thus, 20 patients as a sample for the project was confirmed as an acceptable minimum.

**Treatment Plan Development**

After discussion with the providers, confirmation was received regarding the best location for the migraine treatment plan under the “Plan” section of the patient’s chart. However, it was discovered after conversation with the technical department at Amazing Charts®, that the developed treatment plan could be used as a general template, but the individualized plans would have to be saved for each patient as a new template. The technology team at Amazing Charts® denied that Amazing Charts® had the configuration ability to automatically input information stored in the office note from the previous visit. The patient’s individual template would have to be selected and entered at each visit, but because the template was created, the information would be saved and would not require the provider to re-enter the patient’s specific details. This new
information was discussed with the providers and the decision was made to continue as scheduled with the implementation in the plan section.

Within the “Set Practice Templates” section of the Administrator Options tab, the plan for migraine care was developed based on the recommendations of the ICSI and AHRQ (AHRQ, 2012; AHRQ, 2013a; AHRQ, 2013b; Amazing Charts®, n.d.-b; Beithon et al., 2013). The treatment plan was built to be located in the “Plan” section as an administrative template that could be accessed by all providers. The plan was written in a text box and included five sections, identified as last medication change, preventative migraine therapy, rescue medication(s), non-pharmacological interventions, and emergent plan. All patient-specific response fields were left blank for the provider to individualize to the patient except for the emergent plan section which stated:

Contact Honor Family Practice in the event you experience a migraine headache that is not resolved by your rescue medication(s) prior to going to the emergency room. This will allow your provider the opportunity to manage your care more efficiently, if possible, or contact the emergency department staff prior to your arrival and ensure continuity of care.

The plan was titled “Migraine” for ease of identification by the providers.

**Provider training**

A meeting took place with both providers after the development of the treatment plan. The providers were notified that a bright pink slip of paper would be attached to the patient’s chart if a known diagnosis of migraine headache was identified in the chart prior to the visit. A thorough explanation was provided regarding where to locate the treatment plan and how to insert it within the plan section of the patient’s visit note.
Additional education was provided regarding how the generic treatment plan would need to be saved as a specific migraine plan for the patient after it had been modified for the patient. The new treatment plan would be titled with “MH” for migraine headache and the patient’s initials. The providers were then shown how to recall the treatment plan created for each patient using the example patient that had been previously created. Both providers were very familiar with the Amazing Charts® software program and felt confident in their ability to utilize the treatment plan correctly. The implementation dates were also reviewed. Both providers verbalized understanding of the project and denied having any further questions, but did possess contact information for questions if any were to arise.

**Implementation**

**Timeline**

The project was implemented, as scheduled, on January 5, 2015. The project extended through the close of the work-day on February 18, 2015, which met the 45 calendar days proposed for the project. A total of 350 patients were seen during the inclusion period. The length of the project did not require extension to meet the minimum of 20, as 28 patients meeting the requirements of a qualifying diagnosis and falling within the allowed age range had been seen as of the end of the clinic day on February 18, 2015.

**Data analysis**

**Daily reporting.** Each day’s visits were reviewed individually. A print-out of the daily schedule was obtained and each patient visit was opened completely to review the contents of the visit note prepared by the provider for that day. The past medical history
as identified by ICD-9 codes and the current diagnoses were reviewed to see if the patient was a qualifying patient. If the patient was found to meet the criteria, the plan section was reviewed to see if the patient had a treatment plan implemented. The original list of patients who met the criteria at HFP containing the patient identifiers was also reviewed. The patient was checked off of the list when seen to prevent counting the patient twice when determining if the minimum criteria of 20 qualifying patients was met.

The results found through this daily reporting were compiled on a spreadsheet for analysis at the end of the implementation period. The spreadsheet was divided into six columns (date of service, provider ID, assigned identifier, qualifying diagnosis, treatment plan implemented, and dates no qualifying patients were seen). The providers were given an identifier of 1 and 2. The patient’s previously assigned identifier was used in the spreadsheet for further confirmation that patients were not duplicated. Within the qualifying diagnosis column, a placeholder of 1 was used for two purposes: to confirm the patient had been identified as a qualifying patient and for the ease of adding the column to determine the total number of patients who qualified. Under the heading of treatment plan implemented, 1 was assigned to an answer of Yes, and 2 was assigned to an answer of No. A summary of the daily totals is provided in Figure 2.
Final results. At the end of the project, the data collected revealed 28 patients were seen with a qualifying diagnosis. Of those, 26 migraine treatment plans were implemented in the chart. The use of a basic algebraic equation for percentage was used. The first question pertaining to project success was whether or not the providers were able to achieve an implementation rate of greater than 80% during the implementation period. To determine this, the number of patients who received a migraine treatment plan appropriately during the implementation period (26) was divided by the total number of patients who were determined to be qualifying patients seen during the same period (28). Mathematically, 26 divided by 28 equals 0.92857, or 93%. The providers did achieve the goal of a greater than 80% implementation rate.

However, a second goal proposed in the project was to evaluate each provider individually if an implementation rate of 100% was not achieved. The purpose of this additional review was to provide additional education to improve the success of future implementation projects. Two providers participated in the project. Provider 1 achieved
an implementation rate of 100% after seeing 22 of the patients identified and implementing treatment plans for all of those patients. Unfortunately, Provider 2 only implemented 4 treatment plans for the 6 qualifying patients who were seen. Using the same calculation to determine the percentage, Provider 2 only achieved a 67% implementation rate.

**Summary**

Overall, the treatment plan implementation project was a success. The outcome of 93% implementation rate was encouraging with regards to the potential implementation of other treatment plans for a variety of diagnoses in the future. The variance from one provider to another in the area of implementation success was somewhat disappointing, considering both providers were educated at the same time, given the same information, and were able to return demonstration successfully.
Chapter 6
Discussion

Findings

Literature review

During the data collection period, an additional literature search was performed using CINAHL for any articles that may have been published since December 1, 2014. There were not any additional articles identified that applied to the implementation of treatment plans in a primary care setting for the management of migraine headaches.

Conceptual framework

When evaluating the project through Donabedian’s theoretical framework, the material resources, human resources, and organizational structure were adequate for providing the needed structure to carry out the implementation project. Although the process was understood by the providers, and overall the goal was met, there was a significant breakdown in the follow-through by one of the providers when implementing the plan and making recommendations to the patient for proper care of migraines. The reasoning for this would be better understood through an evaluation of the attitude, subjective norm, perceived behavioral control, and intention of the provider, based on the Theory of Planned Behavior (Ajzen, 1991).

Effectiveness, Feasibility, and Sustainability

Clinical site. To meet the ICSI guidelines, the site plans to continue to utilize the migraine treatment plans as currently being implemented. Time spanning beyond the scope of this project will be required to determine the efficacy of the treatment plans for the patients, but the treatment plans are feasible and effective in meeting the guidelines.
Because of the ease of use related to the treatment plans, the sustainability is expected to be high. Furthermore, the process by which this treatment plan was implemented could be easily duplicated for other chronic illnesses that have similar recommendations related to the use of treatment plans. Asthma, which is a common diagnosis seen at HFP, would be a good example as improved outcomes have been confirmed using the treatment plans and are clearly specified as a guideline for management of the diagnosis (Gibson & Powell, 2004; U.S. Department of Health & Human Services, 2008).

**In General.** The treatment plans developed for this project are specific to users of the Amazing Charts® software program. However, Amazing Charts® does offer a website where template designs can be uploaded and shared with other Amazing Charts® users, which was done with the migraine treatment plan to help disseminate the plan to other providers. Unfortunately, the templates are not compatible with other EMR systems, which significantly limits the dissemination of the template to a large number of other practices.

**Limitations**

A significant limitation was discovered related to the inability to move the information forward from one visit note to another. Consequently, all providers now have to remember to insert the treatment plan at each visit. The greater issue, however, is the expansive list of templates that will begin to develop over time if each treatment plan has to be entered individually under each patient in the system, especially when additional treatment plans are used for other diagnoses. As shown in Figure 3, the list of templates is provided for the provider to choose from. At HFP, this
list also has an additional 26 individualized treatment plans listed for each patient diagnosed with migraine headaches. Once additional treatment plans are added for a variety of other diagnoses, it will be quite cumbersome for the provider to exhaust the list searching for a single patient.

**Figure 3.** Screen shot of template list in Amazing Charts®.

In Figure 3, the far left column lists categories in which templates are organized. The Template Name column describes the template content, while the Text column provides the first few words that were written when the template was created in the Template Text box in the lower portion. The Shared column shows whether or not the template can be used by all providers. In this example, none of the templates listed will be shared since none of the boxes are selected.
An additional limitation is simply in the motivation of the provider. In a healthcare economy where reimbursements are being directly linked with patient outcomes, behaviors exhibited resulting in approximately 50% compliance rates can be financially devastating to a practice. When educating providers, it became apparent it is important to not only discuss the details of the project and have the providers return the explanation, but also to provide each of those involved with a written form of reference to have accessible outlining the details of the previous teaching.

**Anecdotal Findings**

Although improvements as outlined in the research were hoped for, the providers were surprised by the significant change in the number of emergency room visits following the implementation of the treatment plans. The providers reported that as of 4/1/15, only one patient had gone to the ED for treatment of a migraine headache since the treatment plans were implemented. The owner estimates this represents approximately a 90% decrease in ED utilization based on frequency of visits by patients previously. A search performed on Consumerhealthratings.com revealed over the past decade, the average cost per ED visit for headache or migraine treatment was approximately $2,500.00. This is a considerable health care cost savings when evaluating the possible impact of the 90% deduction for service utilization in the local community (Consumer Health Ratings.com, 2015).

Other findings related to satisfaction with the treatment plans were noted, as well. The providers commented on how much the non-pharmaceutical portion of the treatment plan was a value in remembering to go beyond the medicinal treatment. It allowed the providers to think about other treatment modalities, such as environmental
changes and alternative therapies that might be useful. Additionally, the patients also reported being very happy with the treatment plans. This information was taken into consideration when the recommendations were created.

**Recommendations**

Reasons for the reduced implementation rate were explored with Provider 2. The primary reason was related to not understanding she was to implement the treatment plan for patients that were currently being treated, as well as patients who had a previous diagnosis. However, there were some patients that were seen by the provider with a history for whom she did implement the treatment plan, showing an inconsistency in implementation. Additionally, the provider commented that lack of time to review the patient’s previous history was another concern.

A discussion ensued with the provider who did not achieve the goal implementation level concerning what she felt might have been helpful to improve her rate. Written instructions regarding the project was suggested. The provider confirmed that these would have been very helpful. Additionally, time allowed was explored as a possible cause, but Provider 2 typically saw 5 patients for the entire day, on average, compared to Provider 1 who averages 12 visits daily and achieved a 100% implementation rate. Since the benefits to the patient for the use of a migraine treatment plan are documented, and the providers both verbalized understanding of the benefits related to the treatment plans, additional exploration would be required on the part of the supervisory staff at the clinic to discover why the provider did not comply with the implementation project as instructed by management. These reasons could be addressed to ensure improved outcomes for the patients when there were other
implementation projects. Furthermore, establishing performance metrics with accountability would benefit HFP for providers who do not achieve minimum standards to promote the best outcomes for the patients.

It would be valuable for HFP to explore a variety of issues addressed in the migraine treatment plans over time. During the project, one patient was discovered who required the use of a prophylactic medication to better manage her migraine headaches. Evaluating the frequency of use of migraine medications led to this finding, showing an immediate benefit related to the treatment plans. Additionally, evaluation of emergency department use by the patients and whether or not the office was contacted as instructed would be valuable, especially for patients on medication contracts for narcotics. Using the emergency room visits as an opportunity to educate the patient and explore possible preventative approaches to migraine management would be beneficial to the patient and the emergency department.

The development of an office policy regarding the implementation of treatment plans for applicable diagnoses would be a final recommendation. The policy should outline the steps to implement the treatment plan within the Amazing Charts® system. References to the specific guidelines used to develop the treatment plans for each diagnosis should be included. This policy could then be utilized by the providers in the future as a written reference that provides a guideline for the implementation of diagnosis-based treatment templates. Although a clearly defined time interval for reviewing the policy was not located, it is recommended that the policy be reviewed and updated annually based on the current guidelines applicable to each specific diagnosis.
Management of this policy is a role well-suited for the individual who holds the Doctor of Nursing Practice degree.

**Doctor of Nursing Practice Role**

The multitude of roles filled by the provider who possesses the DNP degree are rich and dynamic. The development of this project required both advanced practice nursing skills and administrative skills. Understanding the migraine headache diagnosis and subsequent recommended treatment, as well as the time demands on the provider related to a clinic visit, were critical in the development of this project. Furthermore, having a thorough understanding of the administrative practices during the patient’s scheduling, check-in, check-out process were required in order to evaluate the patients who were seen, the cancelled appointments, and indicators of when the file was completed.

Leadership, advocacy, scholarship, innovation and education were all intermingled throughout the planning and implementation phases of this project. Leadership effectively performed included advocacy for the patient and improved outcomes, which further required education on the topic, the clinic’s systems processes, the information technology utilized by the clinic, and knowledge of the current guidelines related to migraine headaches. Educating the providers for the implementation of this project offers an excellent example of the culmination of these roles, as constant demands on the providers’ time and attention made it necessary to repeat instructions and explanations.

More specifically, the skills developed as a DNP were utilized in a variety of steps during the implementation process for the templates. For instance, during the
development of the template, time was spent networking with the technology specialists at Amazing Charts® in an attempt to discover the possibilities and limitations of the program to determine where the appropriate placement of the template, should be and how it should be best developed. Additionally, the overall plan to carry out the project required coordination and project management beginning with the clerical staff and extending through the providers in a seamless fashion. It was also imperative that all staff were trained in the specific role and responsibilities in the project. All of these tasks were performed while working to foster relationships with the staff that were positive and professional, founded on respect and mutual rapport supporting a team collaborative approach.

**Conclusion**

Implementation of an evidence-based project represents the core of advanced practice of the DNP prepared nurse. A treatment plan for migraine headaches that has been shown to be an evidence-based tool to improve patient outcomes developed collectively by the patient and the provider is the core at the center of patient-centered care. The reduction in ED visits at such an early time following the implementation supports the use of the treatment plans and exemplifies only one area in which the project is beneficial to the patient, the clinic, and the entire health care system due to cost savings. Increased patient satisfaction and provider confidence with the use of the treatment plans demonstrates additional benefits.

It is the marriage of the advanced practice DNP and evidence-based, patient-centered care that created a simplistic, yet effective, project that resulted in improved adherence to guidelines and increased patient participation in individualized plans of
care. As evidence-based care and a focus on patient outcomes continue to strengthen as the driving force behind healthcare reimbursement, it behooves all stakeholders in healthcare to remember it is sometimes the most basic of implementation projects that are required at the patient-provider level that can have the greatest impact, as this relationship is the foundation of healthcare.
APPENDIX A

2 January 2015

Ms. Darleen Johnson
964 Sugarbush Lane
Beulah, MI 49617

Dear Ms. Johnson,

As described in your letter of December 23, 2014, the aims and description of the project you are completing for your dissertation entitled, *Implementation of a Treatment Plan in a Rural Health Clinic for Patients with a Diagnosis of Migraine Headache*, does not fit the U.S. Dept. of Health & Human Services' definition of research. This definition states that research is, "...a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge..." (Code of Federal Regulations, Subpart A, Section 46.102 (d), 2005, 2009).

The determination of this project as not being research is affirmed. Because it is not research, submission to GVSU’s Human Research Review Committee (HRRC) is not necessary. You may proceed with this project.

As you move forward, you are cautioned that your project should not be referred to as research when you discuss it with others. Should you change the aims and activities of your project such that it would then meet the definition of research as quoted above, please cease any contacts with potential human subjects until such time as you submit the project protocol to the HRRC and receive the committee’s approval to proceed.

Good luck with your project.

Cordially,

Cynthia P. Coviaik, PhD, RN, CNE
Professor & Associate Dean, Nursing Research & Faculty Development

Cc: Karen Burton, Interim Assoc. Dean, Graduate Programs
Permission to Use and/or Reproduce The Iowa Model

1 message

Kimberly Jordan - University of Iowa Hospitals and Clinics <noreply@qemailserv.com>   Tue, Mar 17, 2015 at 11:45 AM

Reply-To: Kimberly Jordan - University of Iowa Hospitals and Clinics <kimberly-jordan@uiowa.edu>
To: johndarl@mail.gvsu.edu

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If you have questions, please contact Kimberly Jordan at 319-384-9098 or kimberly-jordan@uiowa.edu.
References


Migraine Headache. (2014). Nursing, 44(8), 44. http://doi.org/10.1097/01.NURSE.0000451525.94598.0b


