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The Effect of Patient Education on Anxiety Levels in Patients Receiving Chemotherapy for the First Time

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THE EFFECT OF PATIENT EDUCATION ON ANXIETY LEVELS IN PATIENTS RECEIVING CHEMOTHERAPY FOR THE FIRST TIME

by

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Student Date

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DEDICATION

This project is dedicated to my parents. Thank you for your unending love, support, and encouragement. I am forever grateful for the sacrifices you have made so that I could pursue my education.

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I would like to thank my faculty advisor, Dr. Christine Kurtz. Her persistence, encouragement and guidance truly helped me successfully complete this EBP project. I would like to thank my boyfriend Jason for his love, support, and tolerance with the many tears and crankiness throughout the last three years, I love you. I would also like to acknowledge the patients who inspired this project, all of whom have touched my life and career.

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ABSTRACT

Cancer affects approximately 1.5 million people every year throughout the United States. Comprehensive care that includes psychosocial aspects is important to help patients effectively adapt to their diagnosis and treatment plan. Improper prevention and management of anxiety can lead to poor psychosocial outcomes, dissatisfaction with care, and decreased adherence to treatment. Current evidence suggests that education is effective at helping reduce anxiety in patients receiving chemotherapy for the first time. The purpose of this evidenced based practice project was to determine if nurse-led patient education regarding chemotherapy side effects, side effect management, and orientation to the infusion center was effective at decreasing anxiety in patients receiving chemotherapy for the first time. Roy’s adaptation model provided for a theoretical framework to understand how education can increase positive adaptive responses to chemotherapy treatment. The EBP project was conducted in a large private hematology/oncology practice in Northwest Indiana. Patients recently diagnosed with cancer received 30 minutes of education regarding chemotherapy side effects, side effect management strategies, and orientation to the infusion center one week before receiving their first chemotherapy infusion. Anxiety outcomes were measured immediately before, after, and two weeks post-intervention using the State-Trait Anxiety Inventory. A patient satisfaction survey was completed at two weeks post-intervention to assess satisfaction with the education and their perception of how well the intervention decreased anxiety. A repeated measure ANOVA was calculated comparing pre, post, and two-week post STAI scores. Results were statistically significant, demonstrating that patient education was effective at decreasing anxiety.

CHAPTER 1

INTRODUCTION

Evidence-based practice (EBP) is key for promoting positive patient health, safety, and cost outcomes (Melnyk & Fineout-Overholt, 2011). Advanced practice nurses (APNs) receive extensive training and education on effectively performing EBP to improve patient outcomes. APNs should always cultivate a spirit of inquiry, identify problems in the clinical setting, and question current practice. By searching and critically appraising the most relevant evidence the APN is able to integrate findings with patients' preferences and values to implement a practice change.

Background

Cancer diagnoses affect millions of people in the United States each year, often leading many Americans to face the difficult road of chemotherapy and radiation. In addition to the 12 million already diagnosed, approximately 1.5 million Americans were newly diagnosed with cancer in 2012 (American Cancer Society, 2012). Most patients are forced to make quick decisions about care as they are shuffled from doctor appointments, diagnostic tests, and surgery. Chemotherapy is a common path for many of these patients.

Statement of the Problem

Data from the Literature

Chemotherapy begins quickly for most patients and education regarding chemotherapy is often neglected. Decreased reimbursement rates for expensive chemotherapy medications leaves practice owners with minimal profit margin and forces them to see more patients to maintain financial health (Zweigenhaft, 2010). With the busy nature of oncology clinics, psychosocial aspects of care are often unattended. When patients are uneducated in regards to their chemotherapy treatments they “often tend to envision the worst-case scenarios, possibly making the anticipation more difficult than the event itself” (Borsellino & Young, 2011, p. 311). They experience anxiety about the “unknown” of chemotherapy and its side effects. Anxiety is one of the most common symptoms experience by newly diagnosed patients with cancer and incidence is reported to be as high as 50% (Sheldon, Swanson, Dolce, Marsh, & Summers, 2008).

Anxiety can cause patients to feel a loss of control over their disease, which is associated with poor psychosocial outcomes, such as depression (Leighl, Gattellari, Butow, Brown, & Tattersall, 2001). Patients experiencing depression are less capable of performing self-care behaviors (Williams & Schreier, 2004). Self-care behaviors are used to manage side effects of chemotherapy such as nausea, vomiting, fatigue, and loss of appetite. Researchers found that oncology patients have a poor understanding of chemotherapy and are often dissatisfied with information they receive about their treatment (Iconomou et al., 2006). When patients are poorly informed they are more likely to experience uncertainty and anxiety, which may lead to decreased compliance with treatment (Iconomou et al., 2006).

A basic tenet of nursing is development of a trusting therapeutic relationship, which allows nurses to identify patients’ psychosocial needs. Oncology nurses are trained to perform patient education about chemotherapy side effects; however, most patients receive only written information during their first chemotherapy treatment (Keller, 2006; Malone, 2007; Sheldon et al., 2008; Williams & Schreier, 2004; Williams & Schreier, 2005). Research demonstrates that education about side effect management lessens the anxiety patients experience (Jacobsen & Jim, 2008; Malone, 2007; Mann, 2011; Prouse, 2010, Sheldon et al., 2008). When patients are able to manage their side effects appropriately, they experience less complications, fewer hospitalizations, and decreased morbidity from chemotherapy (Williams & Schreier, 2004; Williams & Schreier, 2005). Receiving appropriate patient education about chemotherapy is effective in helping patients regain a sense of control and experience less anxiety (Mann, 2011).

Data from the Clinical Agency

The project manager, an employee of the organization, identified a clinical problem in regards to patient education in a privately own chemotherapy infusion center. There are four physicians in the practice and one nurse practitioner who works directly with the practice owner/physician. In addition to medical staff, five nurses and six medical assistants also care for patients. This organization provides care for 80 to 100 patients a day with approximately ten patients seen daily who are new to the organization.

Currently, patients newly diagnosed with cancer and scheduled to receive chemotherapy are given written material on chemotherapy during their first treatment infusion. While there are no regulations or standards for patient education in the organization, current research suggests that this method is not effective. The project manager noticed that due to lack of patient education patients often experienced unnecessary anxiety. In addition, many patients were ill prepared for chemotherapy treatments, unaware of the length of infusions and typical procedures. Anxious patients frequently contacted the office as they experienced common and expected side effects from chemotherapy (nausea, vomiting, diarrhea, hair loss, neuropathy, weight loss etc.). They were unaware that these side effects were expected and were unsure of how to deal with or manage them. In some cases, this anxiety led to patients refusing chemotherapy treatments, delaying the treatment process. The proposed practice change included development of a patient education program wherein teaching is done before patients’ first chemotherapy infusion to decrease anxiety of the unknown.

The practice owner and office manager of the organization had previously developed the “Oncology Patient Education Resources” handbook that appropriately describes chemotherapy, side effects, side effect management, care of venous access device, community resources, and when to contact a health care provider. This handbook is given to patients at their first visit to the organization, at their first chemotherapy visit, or sometimes not at all. Information regarding chemotherapy medications is obtained from www.chemocare.com and administered to the patient during their first chemotherapy infusion by the registered nurse (RN) or medical assistance caring for the patient. Due to the busy nature of the organization, this information is not consistently provided, and is rarely discussed or reviewed with the patient. The patient is responsible to read the educational information on his or her own time.

Purpose of the Project

Clinical Question

The clinical question that led to the development of this EBP project was, “What are the most effective interventions to decrease anxiety in patients receiving chemotherapy?” The purpose of this EBP project was to assess the efficacy of a nurse-led patient education intervention for adult patients receiving chemotherapy for the first time, before the first chemotherapy infusion.

PICOT

The PICOT format (patient population (P), intervention of interest (I), comparison intervention (C), outcome (O), and time frame (T)) helps organize clinical questions in order to yield the most relevant evidence from the literature (Melnyk & Fineout-Overholt, 2011). The PICOT question for this EBP project is: In patients who are receiving chemotherapy for the first time (P), how does nurse-led education (I) affect anxiety levels (O) within two weeks (T)?

Significance of the Project

In 2013, approximately half a million Americans died of cancer, while another one and a half were faced with a diagnosis (American Cancer Society, 2013). The National Institute of Health (NIH) reported in 2008 that over $201.5 billion dollars was spent on cancer, “$77.4 billion for direct medical costs (total of all health expenditures) and $124 billion for indirect mortality costs (cost of lost productivity due to premature death)” (American Cancer Society, 2013, p. 3). The prevalence of cancer throughout America calls for a reevaluation of comprehensive care. Oncology care has begun a new shift towards improving interventions for psychosocial health, as it became a new standard of quality in 2007 with the publication of the Institute of Medicine (IOM) report, “Cancer Care for the Whole Patient.” (National Comprehensive Cancer Network [NCCN], 2013). Effort is needed to disseminate recent findings to improve oncology care in the clinical setting, specifically as it relates to anxiety as this is an important component of psychosocial care. Research has demonstrated that education is the best way to decrease anxiety in this population.

CHAPTER 2

THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

Theoretical Framework: Roy’s Adaptation Model (RAM)

Adaptation is defined as the process by which individuals consciously choose to acclimate to the environment (Galbreath, 2011). The role of the nurse is to promote and maintain adaptation to certain stimuli, such as medical illness, and to alter maladaptive coping behaviors. To properly assist patients towards adaptation, health care professionals must understand how people adapt. The Roy Adaptation Model (RAM) helps health care professionals understand how patients adapt to illness and disease. Developed in the mid 1960’s, the RAM has philosophical underpinnings in von Bertalanffy’s general systems theory and Helson’s adaptation theory. Sister Callista Roy developed her theory during graduate study. Soon after its development, it was added as the conceptual framework for the undergraduate nursing program at Mount Saint Mary’s College in Los Angeles. Since its development, the theory has undergone revision and enhancement.

There are four major concepts within the RAM:

1. Humans as adaptive systems as both individuals and groups
2. The environment
3. Health
4. The goal of nursing

Humans as adaptive systems. The first major concept deals with adaptive systems. Humans are considered an adaptive system, but more broadly, a group, community, organization, or society consisting of humans is an adaptive system (Galbreath, 2011). Each of these systems is holistic and has the ability to adapt to stimuli. Every system has four main characteristics: a) inputs, (b) outputs, (c) controls, and (d) feedback.

Inputs or stimuli can come from external environments or from within the system itself and are classified into three categories: focal, contextual, and residual. Focal stimuli are unexpected events or changes that have the highest risk of damaging the integrity of the system and therefore demand immediate attention. Contextual stimuli are all other environmental factors that may have a positive or negative effect on the situation. Residual stimuli are environmental factors that have “possible but unknown influences” to the focal stimulus (Galbreath, 2011, p. 295). For example, a man is jogging on a trail in the woods by himself when he trips on a log and breaks his leg. The broken leg demands immediate attention and is the focal stimulus in this situation. Contextual stimuli include the fact that he is alone, he does not have a cell phone, he is in pain and afraid. Residual stimuli are that he is frightened of hospitals and has no health insurance.

The system reacts to the input by producing output responses. These output response become feedback to the environment and the system (Galbreath, 2011). These responses, or behaviors, can be both external (adaptive responses or ineffective responses) and internal (coping mechanisms). Adaptive responses support the integrity of the system, while ineffective responses threaten or harm the survival, reproduction, or growth of the system. A mother’s ability to satisfactorily breastfeed her newborn infant would illustrate an adaptive response. On the other hand, an ineffective response is demonstrated by a mother’s inability to satisfy this new role. Coping mechanisms (control processes) are internal dynamics that are more complex than external responses.

Roy identified four subsystems of coping mechanisms for the adaptive system. The cognator and regulator subsystem are mechanisms used by the individual and the stabilizer and innovator subsystem are coping mechanisms utilized by a group to cope with stimuli. The cognator and the regulator subsystems are interrelated and work together towards adaptation of the human system. The regulator subsystem is the innate, unconscious, and physiological responses made by the body automatically. It contains the components of input, internal process, and output. External or internal stimuli serve as input to the human adaptive system and are transmitted to certain areas of the body via chemical, neural, or endocrine mechanisms. Through physiological internal processes, the body responds with output (autonomic reflex, respiration, endocrine organs etc.). For example, increased carbon dioxide in the body stimulates receptors in the brain to increase respiration to expel the extra carbon dioxide (Galbreath, 2011).

The cognator subsystem includes processes of adaptation through learning, judgment, social, and psychological coping (Piazza, Foote, Holcombe, Harris & Wright, 1992). The cognator subsystem receives stimuli from the internal and external environments. The control processes of the cognator subsystem “are related to the higher brain functions of perception or information processing, learning, judgment, and emotion” (Galbreath, 2011, p. 297). Behaviors from adaptive responses and coping mechanisms serve as feedback to the system. The system then analyzes the feedback to determine whether to decrease or increase efforts towards coping with the stimuli.

Control mechanisms are essential to the successful functioning of groups, families, and organizations. These mechanisms are categorized into stabilizer and innovator subsystems. The goal of the stabilizer subsystem is to maintain the system and involves the “established structure, values, and daily activities where the work of the group is done and the group contributes to the general well-being of society” (Galbreath, 2011, p. 300). This process is helpful for groups, families, or organizations that are faced with negative stimuli from the environment. For example, initiating debriefing sessions after a nursing unit undergoes a change in management is an effective way to maintain group structure, values, and morale (Hanna, 2006). Conversely, the innovator subsystem promotes growth and change within a group. It typically involves processes that facilitate a higher level of functioning. A leadership conference for nursing managers in a hospital is an example of the innovator subsystem (Hanna, 2006).

The environment. The second concept, the environment, consists of two elements, internal environment and external environment, both of which serve as input to the human adaptive system. The internal environment is stimuli from within the system and may include conditions of cancer, diabetes, high blood pressure, and other pathophysiological processes. The external environment consists of stimuli from outside the individual system such as a new job, marriage, family death, car accident, or house fire (Galbreath, 2011).

Health. According to Roy, health represents successful adaptation and integration to the environment. Integrity is a major factor in health and refers to a person's ability "to meet the goals of survival, growth, reproduction, mastery, and person and environment transformation" (Galbreath, 2011, p. 302). In the RAM, patients may have an illness and still be considered healthy, as response to the illness is more important than the presence of a condition.

Goal of nursing. The goal of nursing is to help patients develop adaptive responses through four adaptive modes: a) physiological-physical, b) self-concept, c) role function, and d) interdependence. While some of these processes cannot be observed, patient behaviors as a result of these processes are observable. Through observation of the adaptive modes, the health care professional can identify maladaptive or adaptive responses to disease (Galbreath, 2011). The nurse aims to promote positive coping mechanisms while reducing or preventing ineffective behavior.

The physiological-physical mode focuses on the system's physiological responses and interactions with stimuli from the environment (Galbreath, 2011). Fatigue, pain, nausea, vomiting, diarrhea, and dyspnea are all examples of common physiological problems experienced by the patient undergoing chemotherapy. A patient may adapt to nausea and vomiting by eating bland foods, eating small frequent meals, and taking prescribed oral antiemetics as ordered.

Self-concept mode includes the psychological and spiritual well-being of an individual. It consists of persons' feelings about herself or himself and affects behavior. Patients with cancer may experience altered self-concept. Weight loss, alopecia, mastectomies, placement of venous access devices, and colostomies may alter one's self-concept, which may negatively affect coping and adaptation. The nurse should encourage the verbalization of anxiety and anger related to changes in self-concept (Galbreath, 2011; Hanna, 2006).

The role function mode involves role performance, which may be altered when a person becomes ill. A 32-year-old married woman with two children, diagnosed with breast cancer and undergoing chemotherapy may have difficulty maintaining roles of wife and mother. Development of a trusting nurse-patient relationship is essential for the patient to feel comfortable discussing problems in this area. The nurse's goal is to help the patient with effective processes for coping with role changes (Galbreath, 2011).

The last adaptive mode, interdependence mode, applies to the basic need to give and receive love and respect (Piazza et al., 1992). Patients with cancer may feel a loss of independence and support from family members and significant others. Inability to cope with illness can lead to decreased social activity and isolation. Encouraging participation in support groups can help increase socialization by helping the patient feel connected to others. Facilitating discussion between family members can serve to enhance relationships between partners and children (Akyil & Erguney, 2013).

Piazza et al. (1992) applied the RAM to the care of a 38-year-old female patient with breast cancer. The patient had undergone a modified radical mastectomy for adenocarcinoma of the left breast and received concurrent chemotherapy. The patient reached remission, but two years later began to experience joint pain. After increasing pain, a bone scan was ordered, which showed bone metastasis to the hip and shoulder. Soon after this finding, it was discovered she also had metastasis to both lungs. She then began receiving radiation, oral chemotherapy, and single agent intravenous chemotherapy. The patient had fatigue, and respiratory and nourishment problems. The authors used the nursing process developed by Roy that includes assessment of behavior, assessment of stimuli, nursing diagnosis, goal setting, intervention, and evaluation (Galbreath, 2011).

During the first assessment, assessment of behavior, the nurse explores responses (behaviors) of the patient as an adaptive system in relation to the four adaptive modes: physiological-physical, self-concept, role function, and interdependence (Galbreath, 2011). Assessment in each of the four modes promotes a holistic approach to nursing care. Assessment of stimuli is then performed and classified as either focal, contextual, or residual. For example, exposure to second hand smoke from the patient’s husband was recorded as residual stimuli. Nursing diagnoses are formulated and represent the adaptation status of the human adaptive system. Nursing diagnoses in the RAM consist of two components: the most applicable stimuli and its related behavior (Piazza et al., 1992). An example of a nursing diagnosis in the physiological mode is “ineffective airway clearance (behavior) related to congestion (stimuli)” (Piazza et al., 1992, p. 20).

The next step in the nursing process is to identify goals to correct ineffective adaptive responses. A goal for the problem of ineffective airway clearance is improved airway clearance. Nursing interventions are selected that focus on altering the causative stimuli or strengthening adaptive behavior (Galbreath, 2011). In this example, the stimuli the health care professional would aim to manipulate is congestion. Therefore, nursing interventions for ineffective airway clearance should include behaviors to decrease congestion (stimuli), such as deep breathing, increasing fluid intake, and frequent position changes. After nursing interventions are performed evaluation is done to determine effectiveness.

Application of the Roy Adaptation Model

The RAM serves as an appropriate theoretical framework for this EBP project because it provides a way for the nurse to view the human in a holistic perspective (Galbreath, 2011). The complex nature of oncology nursing requires a comprehensive approach and without the use of holistic models, less emphasis is often placed on the psychosocial aspects of care (Piazza et al., 1992). The RAM is a useful framework for oncology nursing because patients with cancer experience alterations in all four adaptive modes: physiological-physical, self-concept, role function, and interdependence. The goal of the nurse is to promote adaptive responses through the four adaptive modes. Helping the patient adapt to input can be performed through increasing patient knowledge, skills, and abilities (Galbreath, 2011). When a patient is faced with the stimuli of a diagnosis of cancer, the nurse should anticipate the patient may use ineffective coping mechanisms. The nurse can prepare the patient with information and anticipatory guidance to strengthen coping mechanisms through all four adaptive modes.

There are many alterations in the physiological mode for the patient undergoing treatment with chemotherapy. One common side effect of chemotherapy is nausea and vomiting. While measures are taken in the infusion center to prevent nausea, such as IV antiemetics, patients often experience this symptom in the home. Nurses can educate patients about measures to reduce nausea and prevent vomiting such as the use of prescribed oral antiemetics, ingesting small frequent meals, and avoiding spicy foods.

Providing patients with the knowledge to manage nausea and other physiological symptoms of chemotherapy is important in maintaining quality of life.

Chemotherapy can alter a patient's mental well-being and self-concept. This is most often a result of physical changes incurred from treatment with chemotherapy such as placement of a central venous access device, mastectomy, colostomy, weight loss, and alopecia. The psychological ramifications of these treatments can be appropriately managed through participation in support groups and education regarding effective means to manage symptoms and changes in physical appearance due to treatment (Maxwell, Givant, & Kowalski, 2001). The nurse can also help the patient obtain mastectomy bras, wigs, scarves, and hats to improve self-concept and identity.

Chemotherapy also has the potential to affect interdependence and role function modes. Frequency and severity of side effects from chemotherapy may increase patients' dependence on family members and care givers, and affect the ability to perform normal roles in the family, workplace, or social setting. The ability to effectively manage side effects can preserve patients' functional capabilities in roles and decrease dependence on others. Involving family in the educational experience can prepare and facilitate role transition within the family (Maxwell, Givant, & Kowalski, 2001). Encouraging and providing information about appropriate support groups can foster development of new mutually satisfying relationships (Galbreath, 2011).

Strengths and limitations. The RAM serves as a useful framework for oncology nursing because the patient undergoing chemotherapy experiences alterations in all four adaptive modes. Through the four adaptive modes, the RAM focuses on the all aspects of a system. Spirituality, a topic often omitted during nursing assessment, is addressed in the holistic underpinnings of the RAM. This theory addresses the physiological needs of the patient in addition to psychological and social needs and encourages use of the family in the plan of care. Roy's model can be applied to groups, families, organizations, and individuals across the lifespan. It is well-respected, researched, and supported in the literature and has undergone many revisions aimed at simplifying its use. (Piazza et al.,1992).

There are limitations to the theory. While the theory is organized for clarity, there are numerous concepts that have the potential to become confusing to the nurse. Outputs, feedbacks, controls, and the various adaptive and ineffective responses increase the potential for confusion. Additionally, there are different concepts that pertain to groups versus individuals. There has been reported lack of clarity regarding assigning behaviors to the appropriate adaptive mode, specifically differentiation of self-concept, role function, and interdependence modes (Fawcett, 2005). Concept clarification and development related to internal and external environment are needed to more easily utilize the theory in practice. Nursing assessment and planning using the RAM is lengthy and given the time constraints of healthcare in the 21st century, can be overwhelming (Galbreath, 2011). The RAM is not frequently used to formulate a treatment plan in the current practice setting.

EBP Model: Iowa Model of Evidence Based Practice

The Iowa model provides guidance for health care providers in making clinical decisions that affect patient outcomes (Ciliska et al., 2011). The authors of the model urge practitioners to identify a practice question or trigger through classification of a clinical problem as problem-focused or knowledge-focused. Problem-focused triggers typically are demonstrated in organizational data that highlights the need for improvement in outcomes. These triggers may come from risk management data, financial data, or benchmarking data. Knowledge-focused triggers stem from new research leading health care providers to question current standards (Ciliska et al., 2011). There are seven steps to the Iowa model:

1. Selecting a topic

2. Forming a team
3. Retrieving evidence
4. Grading the evidence
5. Developing an EBP standard
6. Implementing the EBP
7. Evaluating the process and outcomes

The Iowa model consists of three decision points that aid the clinician in navigating through feedback loops. This model is different from others in that it contains these feedback loops “reflecting analysis, evaluation, and modification based on the evaluative data of both process and outcome indicators” (Ciliska et al., 2011, p. 254). These feedback loops are critical in individualizing the evidence to a multitude of practice settings and places emphasis on the cyclical nature of EBP. Therefore, there is not an end to the process of EBP, but continuous movement towards practice based on the best possible evidence. For example, if an EBP team identifies a problem-focused trigger that is not a topic of priority to the organization, the team is guided to consider other triggers.

Application of the Iowa Model

Step 1: Selecting a topic. The Iowa model places emphasis on the significance of selecting an EBP project that closely aligns with the goals of the organization. Choosing issues that are of importance to the organization will earn the support needed to complete the endeavors required in an EBP project (Ciliska et al., 2011). Most organizations give high priority to matters that address high-cost procedures, high-risk situations, or high-volume problems. Other matters of high priority include those that involve institutional or market trends. In the current EBP project, a problem-focused trigger was discovered based on identification of a clinical problem with current educational practices. The objectives of this EBP project closely align with the goals of the organization, as it is their mission to provide compassionate care to patients from highly educated employees. With the number of patients seen daily in the setting of this EBP project, high volume interferes with the ability of nursing staff to provide effective patient education. On average, 80 to 100 patients are seen at the organization per day. With nursing staff required to care for numerous patients, psychosocial aspects of care are often neglected and emphasis is placed on physiological complaints. A lack of holistic care decreases the marketability of the practice as other well-known organizations boast a comprehensive approach to oncology care. Of course, decreasing patient volume will decrease profitability of the organization; therefore appropriate means to implement patient education while dealing with high volume is a necessity.

Market and institutional trends are pertinent to this EBP project. Many chemotherapy infusion centers are hospital-owned and therefore have more revenue to focus on psychosocial aspects of care that include effective patient education. In order to set organizations apart from others, quality care is essential. A strong and effective patient education program may improve patient satisfaction and quality of life. These positive outcomes could generate a larger number of patients and a more lucrative organization. The first feedback loop of the Iowa model occurs in the first step of the model. The clinician must answer the question: “is the topic a priority to the organization?” If the topic is a priority to the organization the clinician can then move to step 2; however, if the topic is not of importance, the clinician should consider other possible triggers that are of priority to the organization (Ciliska et al., 2011).

Step 2: Forming a team. Once the selected topic is determined to be a priority of the organization, a team is formed. The team for this EBP project will include the DNP project manager, the DNP advisor, and the DNP site preceptor. It is important to include team members that will help create, implement, and assess the effectiveness of the practice change and should ideally contain key stakeholders in the practice (Ciliska, et al., 2011). Positive and negative feedback and suggestions from stakeholders help create a project that is likely to result in lasting change. Members of the selected organization provided important feedback that added to the quality of project implementation. For example, nurses suggested educating patients about the expected duration and typical plan for a first chemotherapy infusion for the orientation component of the educational intervention in the EBP project. The nursing staff had found that patients were often unprepared to stay for long periods of time because they were unaware of how long their chemotherapy infusion would take. The managers and health care providers were pleased that the organization's current educational materials would be used in the implementation of the educational intervention. The health care providers and the office manager had invested significant time and resources developing the patient education handbook, which is underutilized in the organization.

Doody and Doody (2011) used the Iowa model to describe a "bottom up" approach to implementing EBP in an organization where change is initiated by frontline practitioners, rather than imposed by management. Using this approach is more successful than the "top down" method and should be utilized during practice change. All members of the staff, especially management, should be involved in the practice change. Managerial involvement is critical for the team to feel they have adequate support from the organization to implement the practice change.

Step 3: Retrieving evidence. Literature should be assembled, critiqued, and synthesized in order to determine if there is a sufficient evidence base to pilot the change in practice. It is important to find the highest levels of evidence first to address the clinical problem, but lower levels of evidence may also be used. If there is insufficient evidence to support a change in practice, the clinician is guided through the second feedback loop. This feedback loop involves making a decision to either conduct research to improve the body of evidence or base the practice change on lower types of evidence such as case reports, expert opinion, scientific principles, or theory (Ciliska et al., 2011).

A thorough review of the literature was performed using professional electronic databases: CINAHL, Medline, Proquest Nursing and Allied Health Source, Cochrane Library, Joanna Briggs Institute EBP database. After a comprehensive review of the literature, it was determined there is sufficient evidence to support education as an effective intervention to improve anxiety in patients receiving chemotherapy.

Step 4: Grading the evidence. Once evidence is collected, the strength and quality of each piece of evidence is appraised. Effectiveness, feasibility, and appropriateness are three aspects of the evidence that are assessed for applicability. The use of review protocols is vital in standardizing the appraisal process during this step of EBP (Doody & Doody, 2011). Practice guidelines were appraised using the Appraisal of Guidelines for Research and Evaluation II (Agree II) (2009). The Critical Appraisal Skills Programme (CASP, 2013) was used to assess the quality of systematic reviews, evidence summaries, and literature reviews. RCT’s and pilot studies were appraised using the Joanna Briggs Institute Meta-analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) (Joanna Briggs Institute, 2008). Expert opinion was critiqued using the Joanna Briggs Institute-Narrative, Opinion, and Text Assessment and Review Instrument (JBI-NOTARI) (Joanna Briggs Institute, 2008). A grade was obtained for each piece of evidence appraised.

Step 5: Developing the EBP standard. After the relevant literature is appraised and synthesized, the EBP team develops an EBP guideline. The EBP guideline, which reflects consistencies throughout the literature, includes recommendations for practice. Thorough analysis of relevant literature revealed five consistencies. These consistencies were used to create a practice guideline for the EBP project and are discussed further in the “synthesis of the literature” section. It is important to consider individual differences and patient preference in the development of the EBP guideline. In this project, individualizing care was addressed by tailoring each individual's specific chemotherapy regimen because side effects vary greatly in chemotherapy agents.

Step 6: Implementing the EBP. The next step in the EBP process is for the team to conduct a pilot using the guideline created in Step 5. The purpose of a pilot is to test the feasibility and effectiveness of the EBP change in clinical practice (Ciliska et al., 2011). Piloting the practice change is a multi-step process and should include desired outcomes. Properly collecting pre-pilot and post-pilot data is crucial in determining if the practice change is effective. Evaluation of the data assists the clinician in determining if the practice change needs to be modified in any way.

Step 7: Evaluating the process and outcomes. Evaluation is conducted to determine the effect of the new practice on the organization. Barriers that hinder the change process need to be identified and addressed. The last decision point in the model, "is the change appropriate for adoption in practice," leads the clinician through the last feedback loop (Ciliska et al., 2011; Doody & Doody, 2011). This decision is made based on the evaluation of the project process and outcomes. If the change is deemed appropriate, it is instituted into practice and continuous monitoring and analysis of outcomes is performed. The results should then be disseminated to other professionals to support the process of EBP. If the pilot is not deemed appropriate for adoption into practice, the clinician should continue to evaluate the quality of care and the introduction of new knowledge in the literature regarding the topic (Ciliska et al., 2011).

This EBP project was evaluated using results from the State-Trait Anxiety Inventory (STAI) and responses from a patient satisfaction survey. John Kotters eight-stage change process was used to evaluate the process of change and to determine necessary modifications in implementation (Kotter, 1996).

Strength and Limitations

The Iowa model is a tool to guide clinicians through the EBP process. Several feedback loops are critical in increasing the applicability of the model to varying health care systems and settings. The feedback loops also provide a mechanism to support forward progress and decision-making. For example, after selecting a problem-focused trigger, the project manager assessed if the topic of patient education was a priority for the organization. It was determined that this topic was a priority and therefore the project manager continued to the next step and formed a team. This model is fit for use by interdisciplinary teams and therefore is a strength for the selected practice setting as it promotes collaboration from all members of the organization.

The limitations of the Iowa model are few. Nurses using the Iowa model must be dedicated to their specialty area for effective change to occur during implementation of EBP. Careful consideration of patient preference is also important when developing the EBP guideline. Failure of the project manager to create an EBP guideline that accounts for individual patient preference does not adequately reflect evidence based practice and is a concept in the Iowa model that is often neglected (Doody & Doody, 2011).

Literature Search

Haynes 5S Model

The Haynes 5S model is a tool designed to guide a literature search. The model is illustrated in a pyramid format. At the top of the pyramid are systems, which represent decision support systems that match individual patient information with the best available evidence from the literature (Haynes, 2007). The next level of the pyramid is summaries, which draw upon the best available evidence from lower levels of the pyramid to provide an answer to management options for a specific health problem (Haynes, 2007). The next level, synopses, are very brief descriptions of original articles from reviews in evidence-based journals and typically only examine one aspect of a particular health condition. Continuing to move downward, syntheses include results from individual systematic reviews and meta-analyses. The last level on the model consists of results from original single studies in professional journals.

Search Engines and Key Words

A comprehensive search of the literature was performed to determine relevant evidence in regards to effective treatment interventions for anxiety in patients beginning chemotherapy. Various methods were utilized in order to determine if patient education was the most supported intervention for the management and prevention of anxiety in chemotherapy patients. Six databases were examined for relevant evidence: a) Cumulative Index to Nursing and Allied Health Literature (CINAHL), (b) MEDLINE via PubMed, (c) ProQuest Nursing and Allied Health Source, (d) Joanna Briggs Institute Clinical Online Network of Evidence for Care and Therapeutics (JBI ConNect), (e) Cochrane Collaboration and Library, and (f) National Guidelines Clearinghouse. The keywords used in the literature search were patient education, health promotion, education intervention, chemotherapy, cancer, and anxiety. Citation chasing was also performed in order to ensure sufficient evidence was found. To ensure adequate saturation of the literature, a second search was performed using the keywords chemotherapy, cancer, anxiety, treatment, management, and prevention in the same databases.

Inclusion and Exclusion Criteria

To obtain the most relevant literature in regards to the project objective, exclusion and inclusion criteria were applied. Articles were included if they were: a) English language, (b) adult population, (c) peer-reviewed, and (d) published within the last ten years.

Exclusion criteria included: a) patients receiving solely radiation therapy, (b) patients receiving oral chemotherapy, (c) prevention of cancer, and (d) foreign study participants. Articles examining anxiety responses of foreign participants were excluded because it was determined by the project manager that emotional expression could be dependent upon cultural norms of society.

The Cochrane Library was searched using the keywords chemotherapy AND “patient education” AND anxiety, yielding a total of 18 results. After reviewing abstracts for relevance to this EBP project, three were considered relevant. All of the articles were randomized control trials (RCTs) (Schofield et al., 2008; Williams & Schreier, 2005; Williams & Schreier, 2004).

The National Guidelines Clearinghouse was also searched to determine if evidence-based practice guidelines were available to help guide this EBP project. Use of the search terms chemotherapy AND anxiety yielded 47 results. After reviewing abstracts for inclusion and exclusion criteria, only one guideline was found relevant for this project (Sheldon, et al., 2008).

The Joanna Briggs Institute EBP database was searched using the keywords chemotherapy AND anxiety and yielded 183 results, all of which met the inclusion criteria. After reviewing article titles and abstracts, none of the articles were found relevant. Many of the results found in JBI focused on measuring different outcomes of chemotherapy such as the frequency and severity of chemotherapy side-effects (diarrhea, alopecia, nausea and vomiting etc.), which was not the focus of this EBP project. One reference from JBI (JBI, 2011) had unclear support of recommendations, as there were no references listed or authors cited. Additionally, there is also no clear indication of what type of evidence it is, and because of these obscurities, it was excluded.

A search of ProQuest Nursing & Allied Health database was performed using the search terms “patient education” or “health promotion” or “education intervention”, cancer or chemotherapy, and anxiety. This search yielded 847 results. To narrow the search further, “patient education” or “health promotion” or “education intervention” was applied to presence in the abstract. This additional limiter narrowed results to 86. After reviewing titles and abstracts, two articles were found relevant to this project, a pilot study (Mann, 2011) and an expert opinion article (Stephenson, 2006).

A search of CINAHL was performed using “patient education” or “health promotion” or “education intervention” as major concepts. The keyword anxiety was also used while the terms chemotherapy or cancer were limited to presence in the abstract. This search yielded 57 results. After reviewing abstracts for significance to this EBP project, two were considered relevant and included one systematic review (SR) (Prouse, 2010) and one pilot study (Malone, 2007). Prouse (2010) utilized Schofield et al (2007) and Williams and Schreier (2004) in the systematic review; therefore, these two publications are excluded from the table of evidence.

MEDLINE was searched using the same search limiters previously mentioned. This literature search yielded ten results, one repeated from ProQuest, and after reading abstracts to determine significance to the project no relevant articles were found. Careful review of reference lists of the selected evidence yielded two additional practice guidelines (American Society of Clinical Oncology/Oncology Nursing Society [ASCO/ONS], 2012; NCCN, 2013).

To ensure adequate evidence was found, a second literature search was performed, using different key words. The terms used for the second search were anxiety as a major concept AND chemotherapy or cancer AND treat or manage or prevent. The same methods, inclusion and exclusion criteria, and limiters for date and language were used in the second search. The second search of JBI, Cochrane, and National Guidelines Clearinghouse did not yield additional relevant evidence. A search in MEDLINE was performed yielding a total of 274 hits. After reviewing titles and abstracts for relevance an additional two were selected based on aforementioned inclusion and exclusion criteria (Jacobsen & Jim, 2008; Traeger, Greer, Fernandez-Robles, Temel & Pirl, 2012). A similar search in CINAHL yielded 157 results. Many articles were repeated from previous searches and many articles were considered irrelevant due to the psychological nature of study. There were no additional articles added from the last search in CINAHL. A total of 10 articles were included in the final review of the literature.

Description of Levels of Evidence

The hierarchy of evidence rating system developed by Melnyk and Fineout-Overholt (2011) was utilized to organize the evidence.

Level I, the highest level of evidence, includes systematic reviews and meta-analyses of randomized controlled trials. Level I evidence summarizes the best evidence on a certain topic and is used to develop practice guidelines. A meta-analysis summarizes findings from multiple studies creating a summary statistic that is more valid than results from individual studies. SRs are a scholarly synthesis of the literature that aims to answer a specific clinical question. Level II of the hierarchy consists of results obtained from well-designed randomized controlled trials. A RCT rigorously tests an intervention by careful manipulation of an intervention. Level III and Level IV evidence consists of results obtained from controlled trials without randomization, and case-control, or cohort studies. Level V on the hierarchy system contains evidence from systematic reviews of qualitative and descriptive studies, while Level VI is evidence from a single descriptive or qualitative study. The lowest level of evidence, Level VII, comes from expert opinion or opinion of certain authorities (Melnyk & Fineout-Overholt, 2011).

Much high-level evidence was found to support the new intervention of this EBP project. One SR (Prouse, 2010) three practice guidelines (ASCO/ONS, 2012; NCCN, 2013; Sheldon, Swanson, Dolce, Marsh & Summers, 2008), and one evidence summary (Jacobsen & Jim, 2008) were among the Level I evidence. One RCT (Williams & Schreier, 2005) and one literature review (Traeger, Greer, Fernandez-Robles, Temel &

Pirl, 2012) comprised Level II evidence. Two pilot studies qualified as Level VI evidence (Malone, 2007; Mann, 2011). One piece of evidence was expert opinion (Stephenson, 2006), classified as Level VII on the hierarchy system (see Table 2.1).

Table 2.1

Evidence Data Table

Reference	Setting & Sample	Design	Results	Level of Evidence/ Appraisal
American Society of Clinical Oncology/Oncology Nursing Society. (2012). Chemotherapy administration safety standards.		Practice Guideline	Before chemotherapy begins each patient should receive written information, including at a minimum: Information regarding diagnosis, goals of therapy, planned duration of chemotherapy, information on all side-effects, drug-specific effects and plan for monitoring and follow-up. Patient education materials should be appropriate for patient's reading level and health care professionals should document patient's understanding of information.	Level I/ AGREE II score: 65
Jacobsen, P., & Jim, H. (2008). Psychosocial interventions for anxiety and depression in adult cancer patients: achievements and challenges.	14 systematic reviews and meta-analyses that reached conclusions about the efficacy of psychosocial interventions for anxiety and depression.	Evidence Summary	Psychoeducation, problem-solving therapy, stress management, cognitive therapy, and group cognitive behavioral therapy are evidenced-based interventions for anxiety and depression.	Level I/ CASP: 85%

Table 2.1

Evidence Data Table cont.

Reference	Setting & Sample	Design	Results	Level of Evidence/ Appraisal
Malone, P. (2007). Implementation of a prechemotherapy educational intervention.	Urban cancer clinic in the Midwestern United States. Men and women aged 25-83 years old with various types of cancer who were scheduled to take their first IV chemotherapy treatment one week after the chemotherapy class.	Pilot Study Patients were referred to a prechemotherapy educational class that lasted one hour. Information presented included a PowerPoint presentation on chemotherapy side effects and management with written materials. *Patient Satisfaction Survey (8 questions on likert scale)*	84% of participants who completed the patient satisfaction survey reported the educational class as "excellent" or "good." Patients reported the class helped reduce their anxiety.	Level VI/ JBI-MAStARI: 57%

Table 2.1

Evidence Data Table cont.

Reference	Setting & Sample	Design	Results	Level of Evidence/ Appraisal
Mann, K. (2011). Education and health promotion for new patients with cancer.	Outpatient oncology clinic in northern Alabama. Group A patients (intervention group, n=32) were newly diagnosed with cancer (within 2 weeks) who would receive chemotherapy in the clinic. Group B (n=40) were patients who had already received treatment.	Pilot Study Group A received one hour of instruction prior to first chemotherapy in a quiet environment. Patients in group B received education during their first infusion with no prior educational assessment. *Six-question evaluation form*	88 % of patients in Group A were satisfied with their educational experience and only 1% of patients in Group B were satisfied. 100% of patients in Group A and 10% of patients in Group B found educational environment supported learning. 81% of the participants in Group A felt that their quality of life had improved because of the education, 40% of patients in Group B felt the same.	Level VI/JBI-MAStARI: 66%
National Comprehensive Cancer Network. (2013). Distress Management.	132 references cited	Practice Guideline	The primary care oncology team is equipped to manage mild anxiety. A mutually respectful relationship must be developed so the patient and family can learn about treatment side-effects in order to decrease anxiety. Clinicians should be available for questions.	Level I/ AGREE: 89

Table 2.1

Evidence Data Table cont.

Reference	Setting & Sample	Design	Results	Level of Evidence/ Appraisal
Prouse, J. (2010). The impact of methods of information on chemotherapy-related side effects.	Nine RCT's published in English since 2000 that examined participants 18 years or older, diagnosed with cancer and planning to receive chemotherapy treatment.	Systematic Review	Use of multimedia devices (CD-ROM or video-based education program) showed some moderate benefit in decreasing anxiety. There is some correlation between depression and anxiety levels, and recall of information.	Level I/ CASP: 81%
Sheldon, L., Swanson, S., Dolce, A., Marsh, K., & Summers, J. (2008). Putting evidence into PRACTICE: evidence-based interventions for anxiety.	Studies that focused on adult oncology patients not receiving end-of-life care. The guideline focused specifically on interventions to prevent and treat anxiety.	Practice Guideline	Psychoeducational interventions provide at least some benefits to patients experiencing anxiety related to their cancer diagnosis and are recommended for practice. Evidence supports psychosocial interventions (cognitive behavioral therapy, support groups, and individual counseling) to treat chemotherapy-related anxiety.	Level I/ AGREE: 114

Table 2.1

Evidence Data Table cont.

Reference	Setting & Sample	Design	Results	Level of Evidence/ Appraisal
Stephenson, P. (2006). Before the teaching begins: managing patient anxiety prior to providing education.		Expert Opinion	Journaling, participating in support groups, and psychoeducation are interventions that have potential to relieve anxiety. Psychoeducation gives patients an increased sense of control over their cancer and treatment. Psychoeducation includes health education, support groups, venting of emotions, and behavioral techniques to deal with illness.	Level VII/ JBI-NOTARI: 81%
Traeger, L., Greer, J., Fernandez-Robles, C., Temel, J., & Pirl, W. (2012). Evidence-based treatment of anxiety in patients with cancer.	A total of 41 RCT's were analyzed. 28 RCT's focused on psychosocial interventions while 13 focused on pharmacological management of anxiety.	Review of the Literature	Cognitive and cognitive behavioral interventions, relaxation training, supportive counseling, and education are evidence-based recommendations to prevent or reduce anxiety. Conclusions from RCT's demonstrated education is most effective for new diagnosis and patients undergoing chemotherapy.	Level II/ CASP: 68%

Table 2.1

Evidence Data Table cont.

Reference	Setting & Sample	Design	Results	Level of Evidence/ Appraisal
Williams, S., & Schreier, A. (2005). The role of education in managing fatigue, anxiety, and sleep disorders in women undergoing chemotherapy for breast cancer.	Tertiary medical center in the Southeastern United States and a satellite cancer treatment clinic. 71 subjects newly diagnosed with breast cancer. All subjects were 18 years or older, English speaking and had Karnofsky Performance scale rating >70%.	RCT Experimental group (n=38) was given a 20-minute audiotape that included education about exercise and relaxation to manage anxiety, sleep problems, and fatigue. Patients were instructed to listen to the audiotape 12-24 hours before their treatment and as often as desired. Control group (n=33) was given verbal instructions on potential side effects from staff nurses at the time of first treatment. *Self Care Diary* *State Trait-Anxiety Inventory (STAI)*	Patients in the control group experienced statistically significantly higher scores on the STAI compared to the experimental group at the first recording (1.62 vs. 1.5; $p = 0.22$)	Level II/ JBI-MAStARI: 81%

Appraisal of Relevant Evidence

Several appraisal tools were used to appraise the evidence. The Appraisal of Guidelines for Research and Evaluation II (AGREE II) (2009) instrument was used to appraise practice guidelines. This instrument analyzes six independent domains to assess all aspects of the guidelines including a) scope and purpose, (b) stakeholder involvement, (c) rigor of development, (d) clarity of presentation, (e) applicability, and (f) editorial independence. The tool consists of 23 items total and scores are recorded on a 7-point likert scale ranging from “strongly disagree” to “strongly agree”. The maximum possible score is 161, while the minimum possible score is 23. There are no set standards or patterns to classify guidelines as high or poor quality, this determination is left up to the user.

A Systematic Review Checklist developed by the Critical Appraisal Skills Programme (CASP, 2013) was used to appraise the systematic review, evidence summary and literature review. The CASP instrument is a 10-item questionnaire focusing on three major sections a) validity of results, (b) content of results, and (c) applicability of results. In order to quantify the quality of evidence, each item was graded on a 7-point likert scale from strongly disagree to strongly agree. A percentage grade was figured at the end of the assessment. A grade of 90% or better was considered an excellent reference, 80-90% was considered good, 65-80% was considered fair, and scores below 65% were considered poor.

The Joanna Briggs Institute Meta Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) was used to appraise the RCT and two pilot studies (JBI, 2008). The JBI-MAStARI has different checklists in order to appraise different types of quantitative studies. The JBI-MAStARI checklist for RCT’s is a 10-item questionnaire that focuses on aspects of randomization and statistical analysis. For purposes of quantification, a 7-point likert scale was used for each item and a total grade was assigned as a percentage as described above. THE JBI-MAStARI a 9-item checklist for descriptive studies, was used for both pilot studies. Again, a 7-point likert scale was used for each item, which was then converted to a percentage grade. The same percentage ranges were used to grade evidence as was used for the CASP instrument.

The Joanna Briggs Institute Narrative, Opinion and Text Assessment and Review Instrument (JBI-NOTARI) was used to appraise Level VII evidence (JBI, 2008). This instrument is a 7-item tool that assists in assessing validity through measurement of credibility, logic, and motives of the author. In order to quantify the appraisal, each item was rated on a 7-point likert scale ranging from strongly disagree to strongly agree. A final percentage was figured; the same ranges that were used with the previous tools were used to provide a grade.

Three practice guidelines were obtained during search of the literature. The first practice guideline entitled “Chemotherapy administration safety standards” was created by the American Society of Clinical Oncology and the Oncology Nursing Society (ASCO/ONS, 2012). This practice guideline has been developed by two reputable organizations leading the specialty area of oncology and represents individuals from the nursing and medical profession (AGREE: 6). There is no official statement explaining if ASCO or ONS have influenced the content of the guideline (AGREE: 3). The influence of competing interest groups and organizations were not mentioned (AGREE: 2). The overall objective of this guideline is not illustrated (AGREE: 2). There is also no indication that this guideline answers any burning clinical questions (AGREE: 2). The guidelines developed are applicable for any and all chemotherapeutic agents administered in the ambulatory and inpatient settings (ASCO/ONS, 2012). The applicability of specific patient populations is not properly described and therefore gives this item a score of four (AGREE: 4). While it is apparent that the guideline is intended for clinicians, the specific discipline and its intended use are not clearly described

(AGREE: 2). Although broad in the topics covered, there are specific recommendations as to what should be discussed during patient education, which was useful in the development of the EBP for this project. However, the authors do not discuss how the recommendations were formulated or if they were based on relevant evidence; therefore this guideline receives a score of 1 on items 7-13, which deal specifically with how the recommendations were developed and the rigor of evidence selected. Methods for updating this guideline are not specified (AGREE: 2) and the preferences of the target population are not addressed (AGREE: 1). The guideline offers many different standards for the oncology clinician (AGREE: 6), but they are specific and unambiguous (AGREE: 7). Each guideline is easily identified for reference by the clinician (AGREE: 6), but the authors fail to illustrate barriers and facilitators in performing the recommendations (AGREE: 2). The guideline offers advice on how to implement recommendations into practice, but this advice is vague and lacks detail (AGREE: 5). Monitoring or auditing criteria for recommendations in this guideline are not explicitly explained (AGREE: 4). This guideline received a total AGREE II score of 65 and a grade of 40%, which is poor; but was considered relevant for this project. ASCO and ONS are reputable organizations that frequently set standards in oncology practice.

The second practice guideline, “Distress management”, was developed by the National Comprehensive Cancer Network and has been updated for 2013. The guideline development team included individuals from a multitude of relevant disciplines including: a) internal medicine, (b) nursing, (c) medical oncology, (d) surgery, (e) patient advocates, (f) psychiatry, (g) pastoral care, (h) social work, and (i) pain management (AGREE: 7). The objective of this guideline is to provide recommendations for distress management in patients with cancer (AGREE: 6). This guideline is intended for use by the primary oncology team, but social workers, chaplain services, and mental health professionals may also benefit from its use (AGREE: 7). The guideline aims to answer the clinical question of the best management for anxiety (AGREE: 5) and is intended for all patients with cancer (AGREE: 7). Preferences and views of patients were only briefly discussed (AGREE: 4). The NCCN states the recommendations have been formulated using relevant evidence in addition to consensus among panel members (AGREE: 5); however, there are no apparent systematic methods for determining relevant evidence (AGREE: 4). While evidence is used to support recommendations, criteria for selecting evidence is not described (AGREE: 2). Strengths and limitations of the evidence collected was moderately discussed for most recommendations (AGREE: 2). While some recommendations are cited with supporting evidence, not all recommendations in this guideline are cited (AGREE: 3). This guideline has not been externally critiqued or reviewed by experts (AGREE: 2) and there are no identified methods for updating them (AGREE: 2). Recommendations are specific, clear (AGREE: 7), and easily identified by the clinician (AGREE: 7). The guidelines offer a variety of treatment and management methods for different psychosocial problems (AGREE: 7). The risks of untreated anxiety and distress as well as the benefits of effectively managing distress are discussed (AGREE: 3). The guideline offers barriers to implementing recommendations and possible facilitators that need to be developed in oncology (AGREE: 5). Resource implications for recommendations are not discussed (AGREE: 2). The guideline includes the Distress Thermometer (DT), which can be used to initially assess and monitor effectiveness of recommendation (AGREE: 7). While the NCCN discusses other guidelines developed by competing organizations (AGREE: 6), there is no statement regarding the organizational influence of other guidelines (AGREE: 3). The NCCN grades evidence using its own grading scale for recommendations. All recommendations in this guideline are Category 2A indicating it is based on lower-level evidence, but the NCCN states that the guidelines are appropriate. This practice guideline received an AGREE II score of 89 and a grade of 55%, which is poor; but is relevant to this project as it discusses appropriate evidence-based interventions for prevention and management of anxiety.

Sheldon, Swanson, Dolce, Marsh & Summers (2008) developed the last clinical guideline used in this project. The authors of this guideline are all from the nursing profession and therefore do not adequately represent all relevant disciplines (AGREE: 4). The target user, registered nurse, is specifically identified in the guideline (AGREE: 6). The objective was to examine evidence-based interventions to prevent and treat anxiety in patients with cancer (AGREE: 7). The health question addressed in this guideline is adequately described (AGREE: 6). The target population is clearly defined as adult patients with cancer,. Pediatric and end-of-life patients were excluded from the target population (AGREE: 7). Patient preference for recommended interventions was not considered during development (AGREE: 6). A multi-disciplinary literature search was performed using five comprehensive databases focusing on adult oncology patients who were not receiving end-of-life care. The databases searched were described. A five-year period was reviewed (2002-2007) to reveal only the most recent literature related to this topic (AGREE: 7). Evidence relevant to the objective of the guideline was selected for review (AGREE: 6). The authors used the Weight-of-Evidence Classification Schema developed by Mitchell & Friese to categorize recommendations and appraise the literature (AGREE: 6). The highest category on this classification system is “recommended for practice” and means there has been demonstrated effectiveness by strong evidence (systematic reviews, RCT’s, and meta-analyses). Psychoeducational and psychosocial interventions are the two recommended practices described in this guideline. While each recommendation is based on sound evidence (AGREE: 7), the methods for formulating the recommendations are not discussed (AGREE: 1). Each recommendation is easily identified (AGREE: 7), specific and unambiguous (AGREE: 7), and offers different management options for the clinician (AGREE: 7). Although presentation of the guideline is organized appropriately, the guideline fails to identify strategies for implementation (AGREE: 3). The authors only briefly discuss potential barriers and facilitators in performing recommended interventions (AGREE: 4). The guideline does not include a cost analysis of implementing recommended interventions (AGREE: 3). Potential benefits and harms have been addressed in terms of appropriately or inappropriately managing chemotherapy-related anxiety (AGREE: 5). The guideline has been internally reviewed for guideline validation (AGREE: 3), but a procedure for updating the guideline is not addressed (AGREE: 2). This guideline does not recommend appropriate monitoring criteria for effectiveness of recommended interventions (AGREE: 2). These practice guidelines are strongly based on the evidence and clearly delineate appropriate mechanisms for the management and treatment of anxiety in chemotherapy patients. This guideline received a total AGREE II score of 114, a grade of 70%, which is fair and considered relevant for this project.

In an evidence summary, Jacobsen & Jim (2008) critically reviewed and analyzed relevant data that studied the efficacy of psychosocial interventions for the management and prevention of depression and anxiety in patients receiving chemotherapy (CASP: 7). After searching major databases, fourteen publications were identified as relevant. The authors failed to cite a complete use of databases, but briefly mentioned MedLine and PsycINFO and citation chasing. Additionally, they did not identify key words or phrases used to obtain evidence (CASP: 6). Although search methods were vague, the authors used 14 systematic reviews and meta-analyses, which are high- level evidence (CASP: 6). The authors gave careful consideration when selecting best practice recommendations after reviewing relevant evidence. Interventions selected were required to show superior results compared to a control condition in a reputable RCT (CASP: 6). Results from the selected studies were categorized into five different interventions, which included a) psychoeducation, (b) problem-solving therapy, (c) stress management, (d) cognitive therapy, and (e) group cognitive-behavioral therapy (CASP: 6). While results were strongly supported with evidence (CASP: 4) there were no confidence intervals or other statistical analyses performed (CASP: 4). The authors chose to include interventions that showed potential for dissemination (CASP: 7). Interventions that were resourceful and required less than one trained mental health professional to implement were included in the results (CASP: 7). This evidence summary was complete, precise, and clearly presented (CASP: 7). It received a “good” grade of 85% and was utilized for this EBP project.

Prouse (2010) completed a SR to determine the effectiveness of various modalities of information on chemotherapy-related side effects in patients receiving chemotherapy. The outcomes of concern in this SR were fatigue, anxiety, and depression (CASP: 7). The SR would have been more applicable for this project if its main focus were on anxiety; however, much discussion was related to chemotherapy-related fatigue (CASP: 5). A critical review of the literature was performed using a multitude of comprehensive databases and included a search of unpublished data (CASP: 7). Articles were included if they were in English, randomized controlled trials that included participants of 18 years of age or older, diagnosed with cancer and planning to receive chemotherapy. Articles published before 2000 were excluded from the review (CASP: 7). The included RCT’s examined patient comprehension of chemotherapy-related side effects in addition to the utilization of recommended self-care behaviors aimed towards treating or preventing chemotherapy side effects. The validity of each study was assessed using the Joanna Briggs Institute Appraisal Checklist for Experimental studies that included a) blinding to exclude bias, (b) follow-up of study participants, (c) reliability of outcomes measurement for both experimental and control groups, (d) appropriate statistical analyses, and (e) randomization (CASP: 7). While approximately 650 articles were found during the literature search, only nine satisfied the inclusion criteria. The SR divided the study results into two categories: multimedia interventions and psycho-educational interventions. The division of the studies was guided by the literature (CASP: 6). While the results of the systematic review were consistent with other pieces of evidence, they were not adequately described (CASP: 4). Proper statistical support (confidence intervals) was not presented to generalize results (CASP: 4). A cost-benefit analysis was not performed or addressed in this SR (CASP: 4). This systematic review is pertinent to this EBP project as it can be applied to the selected setting and patient population (CASP: 6). This SR received a “good” grade of 81% and is considered relevant for this EBP project.

Traeger, Greer, Fernandez-Robles, Temel, and Pirl (2012) developed a review of the literature on evidence-based treatments for anxiety in patients with cancer. There was no specific intervention studied, although anxiety was the primary outcome assessed (CASP: 5). The patient populations reviewed in this article are similar to the population of the EBP project; therefore results may be applied to the project population (CASP: 5). The significant weakness of this article is that the authors fail to describe a methodological approach for finding relevant evidence (CASP: 4). The authors describe recommendations developed from results of RCT’s that demonstrated significant anxiety reduction in the intervention groups (CASP: 6). The authors graded the RCT’s by comparing them with similar RCTs of comparable sample sizes. Level I evidence meant that there were multiple RCT’s demonstrating support for the intervention and Level II meant that there was at least one RCT with adequate sample size that also demonstrated effectiveness. These evaluation mechanisms are cited from another study, but there is not a clear description of how the RCT’s were rated, thus this decreases the strength of this evidence (CASP: 6). Despite the aforementioned weaknesses, the study adequately summarizes evidence-based treatment methods for anxiety. Results from relevant RCT’s were grouped into specific categories and included

a) cognitive and cognitive behavioral interventions, (b) relaxation training, (c) supportive counseling, and (d) education (CASP: 5). While education was identified as an effective intervention to prevent and manage anxiety, the results were not expressed clearly (CASP: 4). There was little statistical support offered for suggested interventions (CASP: 3), but the results could easily be applied the EBP project setting (CASP: 7). Educational interventions have little associated costs or harm (CASP: 7). While the evidence received a score of 74% (fair), mainly for its lack of proper methodology, it is based on sound clinical evidence and therefore is still relevant for this project.

Malone (2007) performed a pilot study about preventing anxiety experienced during the first chemotherapy administration. This study was initiated in an urban cancer clinic in the Midwestern United States and included men and women, ages 25 to 83 who had various types of cancer. A total number of participants for the project was not revealed and it was not clearly stated if participants had withdrawn from the study (JBI-MAStARI: 4). Random assignment was not used for this pilot study (JBI-MAStARI: 5) as all participants were referred for the intervention by a physician or nurse upon discharge from the hospital (JBI-MAStARI: 6). Outcome measurement was done solely through a patient satisfaction survey that was mailed to the participants after they had received several chemotherapy treatments. Reports of specific items on the patient satisfaction survey were not addressed although the author briefly mentioned rating was based on a likert scale (JBI-MAStARI: 4). A timeframe for outcome measurement was not discussed (JBI-MAStARI: 3). A figure presented at the end of the article provided a sample of comments and suggestions from respondents that demonstrated effectiveness of the intervention. There were no confounding variables identified, therefore it is unclear how potential confounding factors could have affected the results (JBI-MAStARI: 3). While the prime outcome for the study was to alleviate anxiety, this measurement was not adequately recorded and is considered a major weakness for this evidence (JBI-

MAStARI: 3). In addition, the author did not perform statistical analysis of results or a comparison of participants before and after the study (JBI-MAStARI: 3). The author poorly illustrated the results of this study. There was no control or comparisons as all patients eligible for the pilot study were asked to participate. The author did not adequately describe the characteristics of patients included in the study (JBI-MAStARI: 4). Only 60% of participants responded to the patient satisfaction survey. Of all the respondents, 84% rated the class as “excellent” or “good”. While the design of the study showed promise, the lack of proper outcomes measurement decreases the strength of this study, with the article receiving a poor score of 57%.

Another pilot study (Mann, 2011) was conducted to assess the effectiveness of a patient education program at reducing anxiety for newly diagnosed patients scheduled to receive chemotherapy. Patients eligible to participate were asked to voluntarily enroll in the project (JBI-MAStARI: 5). Eligible participants were over the age of 18, newly diagnosed with cancer within the past two weeks, and scheduled to receive chemotherapy (JBI-MAStARI: 6). Participants (N = 80) were divided into two groups: Group A was comprised of patients that had been newly diagnosed with cancer and Group B included patients who had formerly received chemotherapy. Group A initially consisted of 40 participants but eight patients were lost during the study; three to transfers, three to death and two to hospice (JB- MAStARI: 7). Group B consisted of 40 participants. There were no demographical comparisons made between groups (JBI-MAStARI: 5). The intervention was measured on a 6-question tool developed and administered by the project manager (JBI- MAStARI: 4). The instrument measured anxiety, quality of life, and patient satisfaction of the educational experience and was administered after approximately two weeks of chemotherapy. This is consistent with similar studies on the same topic, although this study only included one measurement of anxiety (JBI- MAStARI: 5). No tests for validity or reliability were conducted on the instrument (JBI-MAStARI: 4). The setting for this study was an outpatient oncology clinic in northern Alabama. Confounding variables were not addressed or identified (JBI-MAStARI: 3) and there is no discussion of statistical analysis of recorded data (JBI-MAStARI: 3). Although the study received a total score of 66%, a grade of fair, design and methods can be easily adapted for this project setting and purpose and therefore is relevant.

Williams & Schreier (2005) performed a RCT to examine the effects of education on managing anxiety, fatigue, and sleep disorders in women undergoing chemotherapy for breast cancer. This RCT was conducted at a tertiary medical center in the southeastern United States at a satellite cancer treatment clinic. The medical center mainly served the diverse rural community; most of the participants were African American women with low educational and income levels. A total of 71 subjects who were newly diagnosed with breast cancer and scheduled to receive chemotherapy participated in the study. All subjects spoke English, were 18 years or older, cognitively oriented, and possessed a Karnofsky Performance Scale rating that exceeded 70%. Patients receiving other therapies (radiation) were excluded from the study. Randomization was used to assign participants to either the control group or experimental group; however, the method of randomization is not described (JBI-MAStARI: 5). It is unknown if the participants were blinded to treatment allocation (JBI-MAStARI: 4) or if the allocation of groups was concealed from the allocator (JBI-MAStARI: 4). Whether or not the assessor of results was blind to the treatment allocation is not described (JBI-MAStARI: 4). Patients in the control group received the standard of care in the setting, which consisted of verbal education from the nursing staff during the time of the first chemotherapy treatment. Patients in the experimental group received the standard of care in addition to a 20-minute audiotape that presented education on strategies (exercise and relaxation) to manage fatigue, sleep disturbances, and anxiety, which are common side effects of chemotherapy. A self-care diary (SCD) used in a previous study was used to record occurrence and severity of side effects and the use of suggested self care behaviors (SCBs). This diary had content validity determined by the original author and a 0.80 test-retest reliability determined by another researcher. The State-Trait Anxiety Inventory (STAI) was used to assess anxiety and has had many tests of validity to indicate it is an effective and valid instrument (JBI-MAStARI: 7). There were no additional treatment differences between the control and experimental group (JBI-MAStARI: 6). The same interviewer (graduate-level nursing student) collected data at three different times on all participants to prevent bias. Measurements were done on both groups through telephone format before the first treatment, one-month post-treatment, and three months post-treatment. (JBI-MAStARI: 7). Of the 71 participants, 38 were randomly assigned to the experimental group and 33 were randomly assigned to the control group and all participants completed the study (JBI-MAStARI: 6). The demographic data were comparable between both groups (JBI-MAStARI: 7). In addition to descriptive statistics, a repeated measures analysis of variance was performed on results with a *p* value set at less than 0.05 (JBI-MAStARI: 7). A Pearson’s correlation was also performed on results. This RCT received a “good” grade of 81% and the study provides guidance towards achieving the goal of this EBP project.

The lowest level of evidence according to Melnyk and Fineout-Overholt (2011) is level VII, expert opinion. Stephenson (2006) provides tools to manage patients’ anxiety prior to receiving chemotherapy. Stephenson is clearly identified as the author of this opinion (JBI-NOTARI: 6), and credentials are provided (JBI-NOTARI: 6). The topic is pertinent to the health outcomes of patients with cancer (JBI-NOTARI: 7). Recommendations are based on relevant evidence (JBI-NOTARI: 5) and arguments are thoughtfully organized throughout the article (JBI-NOTARI: 6). While the author provides extensive support from the literature, the evidence supports the author’s opinion only and therefore adds bias to the article (JBI-NOTARI: 5). The author cites a meta-analysis performed in 1995 and two descriptive studies (from 1998 and 2003) as evidence supporting education as a means to manage anxiety. Alternate opinions regarding the topic are not addressed by the author (JBI-NOTARI: 5). This article received a JBI-NOTARI grade of 81%, which is classified as “good”. The author describes psychoeducation as an effective intervention to managing anxiety and therefore is relevant evidence in support of the project.

Construct EBP

Synthesis of Literature to Support EBP

Many studies have shown patient education is effective to decrease anxiety in patients newly diagnosed with cancer who are receiving chemotherapy (Jacobsen & Jim, 2008; Malone, 2007; Mann, 2011; NCCN, 2013; Prouse, 2010; Stephenson, 2006; Sheldon et al., 2008; Traeger, 2012; Williams & Schreier, 2005). Many authors use the term “psychoeducation” to describe health teaching. Psychoeducation is the “provision of information through print, audiovisual, or interpersonal channels designed to increase knowledge of a subject area and reduce uncertainty” (Jacobsen & Jim, 2008, p. 217). After appraisal and analysis of the included literature, five consistencies were identified:

1. Specific patient education topics that decrease anxiety include information about treatment, mainly side effect management (ASCO/ONS, 2012; Malone, 2007; Mann, 2011; NCCN, 2013; Prouse, 2010; Sheldon et al., 2008; Stephenson, 2006; Williams & Schreier, 2005) and a brief orientation to the chemotherapy setting (Jacobsen & Jim, 2008; Mann, 2011; Sheldon et al., 2008; Stephenson, 2006).
2. Education is most effective in preventing and managing anxiety when it is performed prior to the initiation of chemotherapy (ASCO/ONS, 2012; Malone,

2007; Mann, 2011; Stephenson, 2006; Traeger et al., 2012; Williams & Schreier, 2005).

3. The format of patient education is important to consider in order to maximize retention of information (Malone, 2007; Mann, 2011; Prouse, 2010; Sheldon et al., 2008; Stephenson, 2006; Williams & Schreier).
4. Education is most effective when it is performed in a quiet environment that supports learning (Malone, 2007; Mann, 2011; Williams & Schreier, 2005).
5. Registered nurses in the primary oncology setting are effective providers of patient education (Malone, 2007; Mann, 2011; National Comprehensive Cancer Network, 2013; Williams & Schreier, 2005).

Topics of psychoeducation. While psychoeducation is supported in the literature as an effective means to prevent and treat anxiety, the majority of authors (ASCO/ONS, 2012; Malone, 2007; Prouse, 2010; Sheldon et al., 2008; Stephenson, 2006; Williams & Schreier, 2005) cite specific educational topics that are more beneficial than others. The most common topics are side effect management and orientation to the staff and facility.

***Side effect management*.** Sheldon (2008) identified chemotherapy side effect management as a recommended practice in the prevention and management of anxiety in patients receiving chemotherapy. This guideline separated psychoeducation into three categories: a) information about the treatment facility, staff, and contacts; b) information pertaining to a cancer diagnosis and treatment; and c) information focusing on self-care and side effect management. Self-care and side effect management refers to educating patients on how to properly manage common side effects from chemotherapy (nausea, vomiting, fatigue, hair loss etc.). Guidelines created by ASCO and ONS (ASCO/ONS, 2012) recommend that information regarding long- and short-term side effects of chemotherapy be discussed in the patient education aspect of oncology care; however, specific details are not discussed. Likewise, guidelines developed by the National Comprehensive Cancer Network (NCCN, 2013) include that the primary oncology team is responsible for educating patients regarding treatment options, diagnosis, and side effects of treatment.

Prouse (2010) found that patient education about chemotherapy side effects can decrease anxiety. The author analyzed RCT's that examined patient comprehension of chemotherapy-related side effects and use of self-care behaviors to treat or prevent chemotherapy side effects. The authors found that education about side effect management delivered with the use of multimedia devices was useful in improving anxiety associated with chemotherapy infusions.

A RCT conducted by Williams and Schreier (2005) also found psychoeducation effective at decreasing anxiety. The study (N = 71) involved random assignment to an experimental group in which participants received the standard of care and a 20-minute audiotape describing evidence-based strategies (exercise and relaxation) to manage fatigue, sleep disturbances, and anxiety. The control group received the standard of care, which consisted of verbal instructions from nurses and written literature on the side effects of chemotherapy, but no discussion of side effect management strategies. Anxiety, measured using the State Trait Anxiety Inventory (STAI), was assessed before the first chemotherapy treatment, one-month post-treatment, and three months post-treatment. A higher percentage (23%) of participants in the control group reported anxiety at one-month post treatment as compared to the experimental group (14%). A statistically significant (p = 0.001) decrease in anxiety occurred between the first and second SCD for the experimental group. In addition, STAI scores were higher in the control group on all three measurements as compared to the experimental group, although these results were not statistically significant.

Malone (2007) found similar results in a pilot study. Before their first chemotherapy treatment, patients received a one-hour educational intervention in a group setting that involved verbal instruction along with hand-written materials about chemotherapy side effects and management strategies. Study participants completed satisfaction surveys to rate their experience. Eighty-four percent rated the educational session as “excellent” or “good.” Results from open-ended questions on the survey indicated that the class helped reduce patients’ anxiety.

Stephenson (2006) provided expert opinion on psychoeducation. She refers to self-regulation theory, which assumes that patients respond to disease through objective (functional) or subjective (emotional) mechanisms. Subjective responses include anger and anxiety, which can lead to feelings of vulnerability or distress. The nurse should help redirect patients’ energy from the emotional response to the functional response to foster increased involvement in their own care. This theory posits that information given to patients should be derived from four concrete variables, one of which is a description of symptoms that may be experienced due to treatment.

Jacobsen and Jim (2008) performed a systematic review of 14 RCT’s to describe evidence-based interventions to manage anxiety. They found psychoeducation, defined by the authors as providing information aimed to decrease uncertainty and increase knowledge, was effective (Jacobsen & Jim, 2008).

***Orientation*.** Unfamiliarity of the treatment environment may increase anxiety. Some researchers (Jacobsen & Jim, 2008; Sheldon et al., 2008; Stephenson, 2006) found that a brief orientation to the infusion center and staff was effective at preventing anxiety. Orientation to infusion center and staff is included in Jacobsen and Jim’s recommendations as well because it reduces uncertainty and fear of the unknown.

A common theme identified during analysis of findings in the pilot study performed by Mann (2011) was the need for proper orientation to the infusion center.

Patients in group B of this study received prechemotherapy information (facility information, community resources, and chemotherapy information) in the infusion area immediately prior to their first chemotherapy treatment. Through subjective input, this group identified a strong need for a tour of the infusion clinic before their first chemotherapy infusion.

As mentioned previously, Stephenson (2006) utilized the self-regulation theory to support pyschoeducation as a method of managing anxiety. Three components of this theory support an orientation period in an educational program and include a) “description of the physical sensations patients might experience, (b) the temporal characteristics of the event, [and] (c) what the environment will be like during the event” (p. 244). Providing descriptions of the event (chemotherapy) and its associated environment allows the patient to redirect emotional responses such as anxiety, towards functional responses, and improve coping and involvement in his/her own care (Stephenson, 2006).

Medium**.** Standard of care for patient education differs based on the facility, but most often consists of written information (ASCO/ONS, 2012; Mann, 2011; Sheldon et al., 2008). Verbal instruction is also frequently utilized and was the medium most often added to the standard of care (Malone, 2007; Mann, 2011; Williams & Schreier, 2005). Providing written materials with verbal instruction allows patients to continue learning and review materials after the education is performed (Stephenson, 2006).

Researchers (ASCO/ONS, 2012; Malone, 2007; Mann, 2011; Sheldon et al., 2008; Williams & Schreier, 2005) used a variety of media to convey information to patients including audiotapes, pamphlets, PowerPoint presentations, verbal instruction, videos, and interactive computer programs. There is advantage to using multiple types of media with the same patient as it helps reinforce learning (Sheldon et al., 2008). However, not all patients have access to resources required for multimedia interventions. Multimedia devices are expensive and it is difficult to control adherence, which is important to ensure patients are receiving essential information (Williams & Shreier, 2005). Prouse (2010) found that use of multimedia interventions failed to demonstrate increased information recall related to side effects of chemotherapy. However, most studies in the SR found decreased anxiety from use of multimedia interventions in addition to the standard of care, which consisted of verbal information about potential side effects from staff nurses at the time of their first chemotherapy infusion.

Williams & Schreier (2005) used audiotapes to provide education in their study. The audiotapes consisted of calming background music and a female voice providing information about exercise and relaxation to manage anxiety, fatigue, and sleep problems associated with chemotherapy. Patients in the experimental group received the audiotapes in addition to verbal and written information regarding chemotherapy side effects. Patients were instructed to listen to the tapes in their homes 12-24 hours before the start of the chemotherapy or as often as desired. At all measurements of anxiety, patients in the control group experienced more anxiety than those who used the audiotapes in addition to the standard of care (SOC).

***Timing*.** Temporal characteristics of patient education are imperative in decreasing anxiety. ASCO/ONS (2012) guidelines state that patient education should be performed prior to the start of chemotherapy. However, the guidelines do not provide specifications regarding the amount of time prior to chemotherapy. Williams and Schreier (2005) specifically studied the effect of timing in their RCT. They propose that anxiety levels may be abnormally elevated immediately before receiving the first chemotherapy treatment, which may interfere with retention of information (Stephenson, 2006; Williams & Schreier, 2005). Patients in the experimental group of Williams and Schreier’s study received education about chemotherapy side effects and effective management strategies 12-24 hours before the initiation of chemotherapy, while patients in the control group received education during the first infusion. Researchers measured anxiety at three data collection points: before treatment, one month after treatment, and three months after treatment. Patients in the control group experienced significantly more anxiety than patients in the experimental group (*p*=0.001). Moreover, a higher percentage (23%) of participants in the control group reported anxiety at one-month post treatment as compared to the experimental group (14%). The control group demonstrated higher mean state anxiety levels at all three measurement times versus the control group although results were not statistically significant.

Mann (2011) also focused on the timing of education. In his study, the intervention group received education prior to the start of chemotherapy, whereas the control group received the same education during the first chemotherapy infusion. The author did not specifically state how long before chemotherapy the education was provided. Data from patient satisfaction surveys indicated that patients in the intervention group were satisfied with the education they received; in addition, 69% of participates in the experimental group stated that their anxiety was reduced by their education, while standard education was effective in 30% of patients in the control group. Patients in the control group expressed a need for additional information regarding chemotherapy and that information be provided sooner than the day of chemotherapy. There were no statistical analyses performed in this study.

Malone (2007) provided education approximately one week before the start of chemotherapy. Findings were obtained using patient satisfaction surveys that addressed the relevance, effectiveness, and organization of the education. Results of the surveys were not explicitly discussed; however 84% of respondents rated the educational session as “excellent” or “good.” Malone concluded that information given prior to the start of chemotherapy may increase coping strategies.

***Environment*.** The environment in which the education occurs impacts the effectiveness of teaching. Performing education in an environment that supports learning may increase retention (Malone, 2007; Mann, 2011). Both Malone and Mann performed an educational intervention in a quiet area of the infusion center. Mann (2011) found that 100% of participants in the experimental group reported the educational environment was conducive to learning, while only 10% of patients in the control group, who received education in the infusion center, reported the same.

Williams & Schreier (2005) recorded an audiotape describing side effect management strategies so patients could receive the information in the comfort of their homes. Audiotapes were distributed for patients to take home as the authors determined the treatment setting is distracting and therefore not a suitable environment for learning. The practice guidelines and the other studies included in the review of the literature do not discuss an appropriate environment for patient education (ASCO/ONS, 2012; Jacobsen & Jim, 2008; NCCN, 2013; Prouse, 2010; Sheldon et al., 2008; Traeger et al., 2012).

***The Role of the Registered Nurse*.** A consistent theme throughout the literature is the use of RNs as educators. According to NCCN (2013), the primary oncology team is responsible for developing a mutually trusting relationship with patients to facilitate learning. This encourages patients to ask questions and can reduce stress by allowing patients to feel supported by professionals who recognize their concerns (NCCN, 2013; Stephenson, 2006).

RNs possess the skills to effectively provide patient education. In addition, oncology nurses are knowledgeable about chemotherapy and play an integral role in helping patients manage side effects (Williams & Schreier, 2005). Therefore, they can provide education that assists patients in effectively managing side effects at home (Williams & Schreier, 2005). Nurses are the healthcare professionals who interact with patients most frequently, thus they are in a prime position to provide education. Nurses provided education in both pilot studies (Malone, 2007; Mann, 2011) that found education effective at reducing anxiety. Mann attempted to assign the same nurse to perform the educational intervention and the first chemotherapy infusion to reduce anxiety related to encountering unfamiliar staff. Utilizing the same nurse also provided for better continuity of care. Through fostering the nurse-patient relationship, patients feel more compelled to seek help and ask questions, further decreasing anxiety (NCCN, 2013). Providing patient education about expected side effects and self-management strategies may decrease unwarranted hospitalizations, emergency room visits, and telephone calls (NCCN, 2013; Stephenson, 2006).

Best Practice Recommendation

After analyzing the literature for major themes and consistencies a best practice recommendation was created. The best practice recommendation for this EBP project included a nurse-led psychoeducational intervention for all adult patients newly diagnosed with cancer and scheduled to receive chemotherapy. Participates made an appointment to meet with the project manager for education regarding side effect management strategies and what to expect on their first day of chemotherapy. The education occurred approximately one week before the patient’s first chemotherapy infusion in an empty examination room or physician office, lasted approximately 30 minutes, and included opportunity for patients and family members to ask questions. The project manager performed the intervention using the educational materials currently used at the infusion center. Informational sheets obtained from www.chemocare.com were provided for each chemotherapy medication in the patient’s regimen in addition to a Patient Education Booklet created by the institution. The folder consisted of general information regarding cancer, chemotherapy side-effects, port-a-caths, community resources, and space for patients to record infusion dates, medication lists and notes.

The educational session focused on expected side effects of chemotherapy and appropriate management strategies. A brief orientation to the infusion center and introduction to available staff was included in the intervention (Appendix B). Patients were informed of the typical procedures to expect during their chemotherapy visit, in addition to belongings they may want to bring (blankets, food, headphones, books etc). Patients who wished to participate in the project were asked to complete the STAI before the educational intervention, immediately after, and then again two weeks after the intervention. At the 2-week follow-up, patients also completed a patient satisfaction survey.

Answering the Clinical Question

The PICOT question for this project was, “In first-time chemotherapy patients (P), how does nurse-led education (I) affect anxiety levels (O) within two weeks (T)?” A comprehensive review of the literature was performed and the most effective evidence-based interventions were summarized. An educational intervention was created for this EBP project. The process and outcomes of the project were evaluated to determine its effectiveness at the selected project setting.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Setting and Sample

The setting for this EBP project was a large privately owned oncology/hematology practice in northwest Indiana where the project manager is employed. This organization provides chemotherapy services in its 24-chair infusion center to adults 18 years and older with a variety of malignancies. In addition to receiving chemotherapy, patients may also come to this facility for laboratory services and examination by the physicians. After review, the practice owner/physician provided feedback and approval of the project intervention and desired outcomes. A registered nurse at the facility was chosen for collaboration on the project to ensure that patients who participated received the proper evaluation tools (STAI and patient satisfaction survey) and documents. Neither the organization nor the patients experienced financial burden as a result of participating in this project.

The target population for this project was adult patients (18 years or older) newly diagnosed (within three weeks) with any type of malignancy and scheduled to receive chemotherapy in the outpatient setting. Patients with a history of cancer who had previously undergone chemotherapy were included in the project if they were scheduled to receive a different chemotherapy medication or regimen. Project implementation occurred over a 12-week period starting in September 2013.

Outcomes

The primary outcome for this EBP project was the prevention and management of chemotherapy-related anxiety. To measure anxiety, patients completed the State-Trait Anxiety Inventory (STAI) immediately before, after, and two weeks following the intervention. A satisfaction survey was also completed two weeks post intervention to determine if psychoeducation was correlated with anxiety scores. A reminder note was placed on the paperwork with the specified 2-week post intervention date highlighted; however, patients were instructed to write the actual date of completion on the forms. Patients were reminded to complete the appropriate paperwork via a telephone call one to two days prior to the 2-week follow-up. Patients were instructed to bring the paperwork to their next appointment or mail it to the practice manager in a preaddressed, stamped envelope provided.

Intervention

The psychoeducational intervention was a structured 30-minute one-on-one session performed solely by the project manager, with a short time allotted for questions. Thirty minutes was determined to be an appropriate timeframe as educational interventions in the literature ranged from 20 minutes to one hour (Malone, 2007; Mann, 2011; Williams & Schreier, 2005). Patients also received a brief orientation to the chemotherapy area and an introduction to available staff members. The education focused specifically on chemotherapy side effects and side effect management strategies. Patients were initially instructed about the specific chemotherapy regimen they were prescribed and the length of each infusion. The education then focused on possible side effects of chemotherapy and appropriate management strategies, safety precautions, coping strategies, and possible prevention mechanisms. Specific details of the teaching and orientation are provided in the following sections.

Side effect management. The “Oncology Patient Education Resources” handbook, developed by the facility’s physicians and office manager, was used for educating patients about general chemotherapy side effects and management strategies. This handbook was developed in 2012 using references including the American Cancer Society, National Cancer Institute, American Society for Clinical Oncologists, and the Oncology Nursing Society. Side effects discussed in this handbook include a) nausea and vomiting, (b) diarrhea, (c) constipation, (d) mouth sores, (e) neuropathy, (f) hair loss, and (g) fatigue. Safety precautions, coping strategies, and self-management techniques were discussed for each listed side effect.

Chemotherapy-specific information was obtained from www.chemocare.com, a resource that is currently utilized by the organization (See Appendix A for an example of patient handout). This website is provided by the Scott Hamilton CARES Initiative that serves to empower patients through their journey with cancer. Currently these handouts are given to the patients during their first chemotherapy infusion. This resource was used to discuss side effects that are specific to certain chemotherapy medications. The handouts were provided to patients and information pertinent to the patient's specific regimen (if applicable) was highlighted and discussed with the patient. Safety precautions, coping strategies, and self-management techniques were then explained for applicable side effects. For example, patients receiving Taxotere (docetaxel), a common chemotherapeutic agent used to treat breast and lung cancer, may experience color changes in their fingernails and toenails. This side effect is common and specific only to this medication. Patients are unable to receive manicures during this time and are discouraged from tearing off remaining fingernails and toenails. It is important for patients to understand that occurrence of this unique side effect is expected. By teaching patients to manage side effects, they may feel more in control of their chemotherapy experience (Malone, 2007; Mann 2011). After the educational information was provided, patients had approximately five minutes to ask questions and receive clarification or reinforcement of teaching.

Orientation. After education about chemotherapy, patients were oriented to the facility. Information about the facility has been shown to be effective in managing anxiety (Jacobsen & Jim, 2008; Mann, 2011; Sheldon et al., 2008; Stephenson, 2006).

Participants were guided through the infusion center while the project manager discussed items patients may want to bring during their infusion (pillows, blankets, food, headphones, books, etc). Some infusion chairs have a television, but require headphones to hear sound, therefore patients were encouraged to bring personal headphones. Patients were encouraged to bring items (computers, ipod, books etc.) to occupy themselves as some infusions may take up to seven hours. Patients were also encouraged to bring a family member or friend for support. While blankets and pillows are available for patients during chemotherapy, patients were encouraged to bring their own from home for comfort. Patients were informed they were allowed to bring food to eat during their chemotherapy infusion. The location of a small refrigerator was shown to the patients for storage of cold food. Patients were also instructed that a member of the staff could heat food in a microwave in the office lunchroom. The chemotherapy chairs were shown to the patients and instructions on how to use the reclining feature were given. The infusion pumps and location of the bathrooms were shown to the patients. Patients were given information about precautionary measures for first chemotherapy infusions including that an emergency medication box containing Benadryl, dexamethasone, and epinephrine and a bag of normal saline would be placed by their chair during infusion in case of emergency or adverse event. Patients were also instructed that they would receive a bell to ring in case of emergency. Medical and nursing staff available in the infusion center was introduced to patients at the time of orientation.

Planning

Planning began three months prior to project implementation. The project manager met with the physician/practice owner to discuss the design and strategies of implementation. The practice owner approved the project and ensured organizational support throughout implementation by allowing use of facility resources (educational materials, conference room, printers, patient education handbook, etc.) and time needed from staff to explain the project to potential participants when the project manager was unable to be at the facility.

The project manager also collaborated with members of the nursing staff to discuss strategies of implementation. Cooperation and support from the nursing staff was integral to successful implementation as the nursing staff is responsible for administering and preparing chemotherapy. Nurses needed to be aware of the project objectives and design in order to facilitate continuous feedback throughout the project and also ensure that potential participants for the project were recruited. This collaboration was informal and took place during business hours. Suggestions regarding implementation were received from the nursing staff. One suggestion was to educate patients on the length of time of their chemotherapy infusion, as many patients were unprepared to stay for the scheduled length of time. One registered nurse in particular was chosen for facility coordinator for the project. This nurse was responsible for ensuring participants received and completed the correct assessment paperwork when the project manager was unavailable, as the project manager only worked at the facility on Mondays and Fridays. In addition, the nurse also helped capture participants when the project manager was unavailable. This nurse has prior research experience and is considered a role model for other nursing staff at the facility.

The project manager decided to use the educational materials currently used in the facility in the EBP project. These materials were determined to be effective tools for patients receiving chemotherapy; however, are rarely utilized correctly. They are most often distributed to patients without explanation with the expectation that patients will read and understand them on their own. In addition, the materials are not used consistently as some patients never receive them. There is no prompt or reminder in the electronic medical record system (EMR) to complete education; therefore, emphasis on the importance of education is lacking in the new computer charting program. Select physicians in the practice chart in the interval history that chemotherapy side effects were discussed with patients, but charting is scattered and not uniform among the physicians or nurse practitioners in the practice. Project participants and educational interventions will not be charted in the EMR.

Recruiting Participants

Patient charts were reviewed by the project manager Monday through Friday at the beginning of each day to determine patients who were appropriate for the project. Patients were eligible to participate in the project if they were newly diagnosed with any type of cancer and scheduled to receive chemotherapy in the office setting. Patients receiving chemotherapy for recurrent disease were asked to participate only if they were scheduled to receive different chemotherapy drugs than they had received in past treatment. Collaboration between the reception staff and the project manager was imperative so all new patient charts could be reviewed by the project manager. Patients new to the practice are designated on the schedule for each workday. The project manager then reviewed each new patient chart to better determine eligibility for participation in the project. Established patient charts were also reviewed in order to determine possible cases of recurrent disease. The project was explained to the patient by the project manager, facility coordinator, or physician after a diagnosis was made and a treatment plan was developed. A handout containing information about the project was also provided for patients to read (Appendix C). If a patient wished to participate in the project, an appointment was made for the project manager to meet with the patient and family (if desired) for the educational session approximately one week before the first chemotherapy infusion.

Data

Reliability and Validity. The State-Trait Anxiety Inventory was used to measure anxiety. The STAI was chosen for this project as it is most consistently used throughout the literature. Since its development in 1964, it has been used extensively in studies to assess anxiety related to real-life stressors such as surgery and dental procedures (Spielberger, 1983). The STAI measures state and trait anxiety. State anxiety is how a patient feels "right now" and is measured using the Y-1 form, which consists of 20 statements that patients rate on a likert scale. Patients are asked to rate intensity of statements from "not at all" to "very much so." The scale ranges from scores 1 through 4; a score of four indicates "very much so," 3 indicates "moderately so," 2 indicates "somewhat," and 1 indicates "not at all." Qualities of state anxiety include apprehension, tension, nervousness, and worry. Scores on this form increase due to psychological stress. Trait anxiety is how patients generally feel and is measured using 20 statements on the Y-2 form. Patients rate the occurrence of specific feelings on a scale ranging from 1 to 4; a score of 4 indicates "almost always," 3 indicates "often," 2 indicates "sometimes," and 1 indicates "almost never." Each statement is given a score of 1 to 4. A score of 4 indicates high anxiety on 10 of the items in Y-1 and eleven of the items in Y-2. The remaining statements in each form are reversed; therefore a score of 4 indicates the absence of anxiety on 10 of statements in Y-1 and nine of the items in Y-2. Anxiety scores for both forms combined can range from a minimum of 20 to a maximum of 80 (Speilberger, 1983).

Reliability and internal consistency tests have been performed extensively on the STAI since its development in 1964. Statistical analysis of reliability and internal consistency was performed by Speilberger (1983) and presented in State-Trait Anxiety Inventory for Adults: Manual, Instrument, and Scoring Guide. All but one statement for the S-anxiety scale, Y-1, had an alpha coefficient above .90 with a median coefficient of .93. Alpha reliability coefficients increase when Y-1 is given under times of psychological distress. Alpha coefficients for the T-anxiety scale, Y-2, were also scored high with a median coefficient of .90. (Speilberger,1983).

Collection. Measure of anxiety was obtained by patient completion of the STAI. Demographic data were obtained from patient charts and in a face-to-face interview with the project manager immediately before the educational intervention. Demographic data included history of cancer, history of anxiety and use of antianxiety medications (See Appendix D). It was important to know if patients had a previous history or diagnosis of anxiety disorder as this could potentially affect current psychological reactions to cancer and chemotherapy (Williams & Schreier, 2005). Patients were assessed to determine if they were currently taking oral anxiolytic medications as this could result in lower anxiety levels due to effects of medication rather than educational instruction. Cancer diagnosis and regimen were important to include in the demographic information because some chemotherapy regimens have a higher prevalence of side effects. Research suggests increased frequency of side effects can cause symptom distress and decrease functional capacity and quality of life (Williams & Schreier, 2005). Goal of chemotherapy (curative, palliative, or control) was also included in the demographical data.

The project manager created a patient satisfaction survey for patients to complete two weeks after the intervention. This form was used to assess patients' satisfaction with the educational intervention and their perception of how it affected their anxiety (See Appendix E).

Management and Analysis. All patient information was placed in a folder in a secure locked box to protect participants' privacy. Participants were assigned a code number so that patient names were not used on forms. The form containing patient names and code numbers was also placed in the locked box.

The SPSS-18 statistical analysis program was used to analyze the data, which was entered into a password-protected file. A repeated measures ANOVA is used to compare three or more sets of the same dependent variable and was used to compare the three measures from the STAI (Polit & Beck, 2012). Paired samples *t* test was also utilized to determine the statistical significant between each point of measurement. Descriptive statistics were used to analyze data collected from patient satisfaction surveys to determine mean scores and percentages. Descriptive statistics were also used for analysis of demographical data to determine characteristics of the final sample.

Protection of Human Subjects

The project manager completed a training course regarding the protection of human subjects through the National Institute of Health prior to implementation of the project. The project was reviewed and approved by the Institutional Review Board (IRB) at Valparaiso University. The organization owner and manager provided approval of the project as there is no IRB at the clinical site. The project manager maintained confidentiality throughout the project by securing patient documents and respecting patient privacy. Professionalism was upheld through demonstration of positive personal behavior and appearance.

CHAPTER 4

FINDINGS

The purpose of this EBP project was to determine if nurse-led patient education reduces anxiety in patients receiving chemotherapy for the first time over a two-week period. Anxiety outcomes were measured using the STAI before, immediately after, and two weeks after the educational intervention. Patient satisfaction surveys were also distributed two weeks after the intervention to determine if patients perceived decreased anxiety scores were attributed to their education. Data were analyzed using SPSS 18 statistical software. Patient identification was protected and omitted from data analysis. Descriptive analysis was performed on demographic data for the sample.

Sample

The intervention was provided from September to December 2013, with a three-week extension in mid-January 2014 in order to maximize the number of participants. Of the 26 participants eligible for this EBP project, 16 agreed to participate yielding a participation rate of 69.5%. A total of 15 (93.75%) participants completed the EBP project. One patient failed to complete the two-week follow-up assessment due to mortality. Demographic, pre and post intervention data were collected on this participant and included in analysis.

Demographics. Gender was relatively evenly distributed among participants; 56.3% were female (*n* = 9) and 43.8% were male (*n* = 7). The mean age of participants was 58.68 years. The most common cancer diagnosis was evenly distributed among breast (25%), lung (25%), and colorectal (25%) cancers. Demographic data revealed that 43.8% of participants exhibited metastatic disease. A small percentage (12.5%) of participants had a history of diagnosed anxiety and were on anxiolytic medications (12.5%). Table 4.1 displays the demographic information in its entirety.

Table 4.1

Characteristics of Participants

	n (%)
Gender	
Female	9 (56.3)
Male	7 (43.8)
Age	16 (100)
Race/Ethnicity	
Hispanic	1 (6.3)
Caucasian	7 (43.8)
African American	8 (50)
Level of education	
GED	1 (6.3)
Middle School	2 (12.5)
High School	9 (56.3)
Associates Degree	1 (6.3)
Bachelors Degree	2 (12.5)
Masters or higher	1 (6.3)
Marital Status	
Married	7 (43.8)
Single	4 (25)
Divorced	3 (18.8)
Widowed	2 (12.5)

Table 4.1 *cont.*

Characteristics of Participants

	n (%)
Diagnosis	
Breast Cancer	4 (25)
Lung Cancer	4 (25)
Colon/Rectal	4 (25)
Head/Neck	1 (6.3)
Prostate	1 (6.3)
Other	2 (12.5)
Metastatic Disease	
Yes	7 (43.8)
No	9 (56.3)
Goal of Therapy	
Curative	8 (50)
Palliative	8 (50)
Previous diagnosis of cancer	
Yes	3 (18.8)
No	13 (81.3)
Type of previous diagnosis	
Head/Neck	1 (6.3)
Cervical	1 (6.3)
Prostate	1 (6.3)

Table 4.1 *cont.*

Characteristics of Participants

	n (%)
Previously received chemotherapy	
Yes	1 (6.3)
No	15 (93.8)
History of anxiety	
Yes	2 (12.5)
No	14 (87.5)
Specific anxiety disorder	
Generalized anxiety Disorder	2 (12.5)
Use of anxiolytic medication	
Alprazolam	2 (12.5)
None	14 (87.5)
Enrolled in clinical study	
No	16 (100)
Immediate family member received chemotherapy	
Yes	3 (18.8)
No	13 (81.3)

Outcomes

Statistical testing. Statistical analysis was performed using SPSS 18, a password protected software system. The dependent variable of anxiety was measured immediately before, immediately after and two weeks after the educational intervention using the STAI. Because three measurements of the dependent variable were collected over a period of time, a one-way repeated-measures ANOVA (RM-ANOVA) was utilized for data analysis (Polit & Beck, 2012).

A RM-ANOVA was calculated comparing the STAI total scores at three different times of measurement: pre intervention, post intervention, and two weeks post intervention. A statistically significant effect was found ($F(1,14) = 207.93$, $p < .001$) (see Table 4.2). Post-hoc analysis using a paired samples *t* test between each time of measurement showed a statistically significant difference between pre-intervention and post-intervention STAI scores only (t (15) = 2.730, $p <.05$). The mean for the pre intervention STAI was 42.1 (*SD* = 12.96); the mean for the post intervention STAI was 37.27 (*SD* = 13.47) (see Figure 4.1). In addition, the items, “I feel upset,” “I feel frightened,” “I feel nervous,” and “I feel worried,” were extracted from the STAI for individual analysis with a RM-ANOVA. All questions demonstrated statistical significance ($p <.001$) (Table 4.3).

Table 4.2

RM-ANOVA of STAI Anxiety Scores

STAI Anxiety Scores	Mean	*SD*	F	*p*
Pre-intervention	42.01	12.96	207.93	.000
Post-intervention	37.27	13.47		
2 wks Post-intervention	38.40	10.55		

Figure 4.1

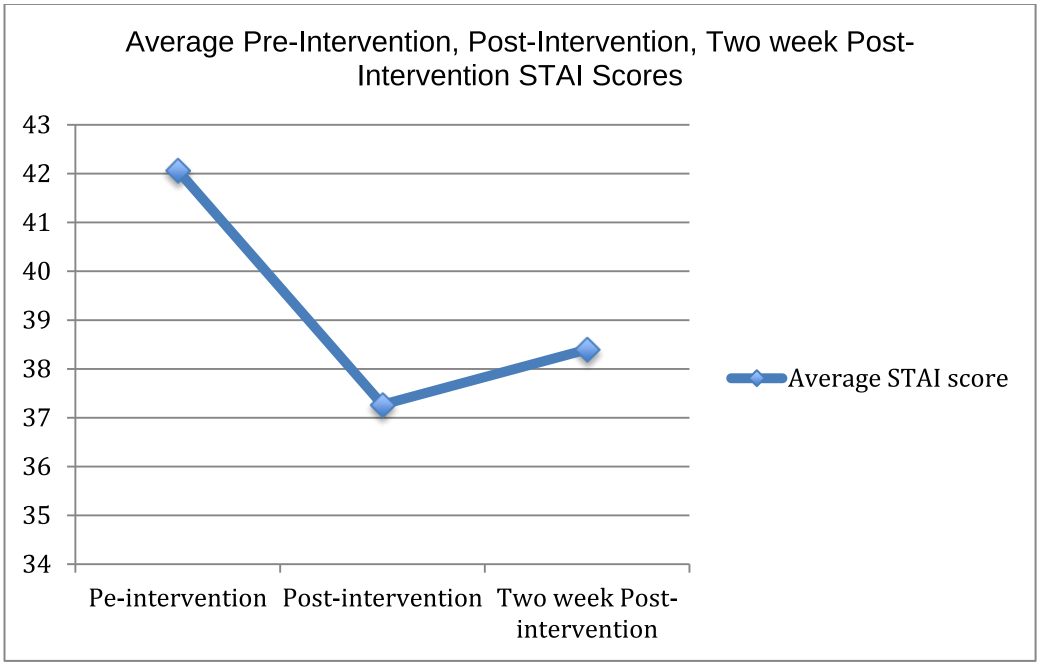
Average Pre-Intervention, Post-Intervention, Two week Post-Intervention STAI Scores
43
42
41
40
39
38
37
36
35
34
Pe-intervention
Post-intervention
Two week Post-intervention
Average STAI score

Table 4.3

RM-ANOVA of Selected STAI Items

STAI Anxiety Scores	Mean	*SD*	F	*p*
"I feel nervous"				
Pre-intervention	2.40	1.12	113.29	.000
Post-intervention	2.07	1.03		
2 wks Post-intervention	1.67	0.72		
"I feel frightened"				
Pre-intervention	2.27	1.22	65.17	.000
Post-intervention	1.87	1.25		
2 wks Post-intervention	1.67	0.82		
"I feel upset"				
Pre-intervention	1.60	1.06	52.37	.000
Post-intervention	1.40	0.91		
2 wks Post-intervention	1.67	0.98		
"I am worried"				
Pre-intervention	2.4	1.29	65.36	.000
Post-intervention	2.0	1.07		
2 wks Post-intervention	2.0	1.07		

Table 4.4

Paired Samples t Test for STAI Anxiety Outcomes with Mean Difference in Scores

	M *(SD)*	*t*	df	*p<.05*
Pair 1				
Pre-intervention	4.44 (6.50)	2.730	15	.015
Post-intervention				
Pair 2				
Post-intervention	-1.13 (13.16)	-.334	14	.744
2 wk Post-intervention				
Pair 3				
Pre-intervention	3.67 (12.87)	1.104	14	.288
2 wk Post-intervention				

Reliability data was obtained on the STAI for all times of measurement. Cronbach's alpha was utilized to measure internal consistency of the STAI. Internal consistency is how well a scale or instrument measures a specific attribute (Cronk, 2012; Polit & Beck, 2012). The reliability coefficient for the pre intervention, post intervention, and two-week post intervention STAI were 0.938, 0.950, and 0.902 respectively.

In addition to anxiety outcomes, patient satisfaction was also measured using a survey created by the project manager. This survey consisted of ten items each scored on a 5-point likert scale. A score of one on the likert scale indicated the patient strongly disagreed with the statement and a score of five indicated the patient strongly agreed. The patient satisfaction survey was administered at the two-week follow-up. A mean was calculated that reflects the average score for each item on the patient satisfaction survey. A majority of patients (87.6%) strongly agreed or agreed that they were satisfied with the educational experience. Likewise, most patients (87.5%) strongly agreed or agreed that the educational experienced was responsible for decreasing their anxiety related to their first chemotherapy treatment (see Table 4.5). Among subjective data collected from the open-ended questions on the survey, two patients felt that the educational intervention should continue throughout the course of treatment. In addition, one patient valued most the nurse-patient interaction during the education. Three participants reported that their favorite part about the education was learning about the side effects to expect from their chemotherapy treatments.

Table 4.5

Patient Satisfaction Survey Results

	n (%)	*M (SD)*
“I am satisfied with the educational experience”		4.13 (.52)
Neither	1 (6.3)	
Agree	11 (68.8)	
Strongly Agree	3 (18.8)	
“The education answered all my questions about my chemotherapy”		3.67 (.89)
Disagree	2 (12.5)	
Neither	3 (18.8)	
Agree	8 (50.0)	
Strongly agree	2 (12.5)	
“The amount of time between the education and my first chemotherapy treatment was good”		4.0 (.53)
Neither	2 (12.5)	
Agree	11 (68.8)	
Strongly Agree	2 (12.5)	
“The information helped me manage my side effects of chemotherapy”		3.93 (.59)
Neither	3 (18.8)	
Agree	10 (62.5)	
Strongly Agree	2 (12.5)	

Table 4.5 *cont.*

Patient Satisfaction Survey Results

	n (%)	*M (SD)*
"The educational experience helped me decrease my anxiety, worry, and fear about my first chemotherapy"		4.33 (.62)
Neither	1 (6.3)	
Agree	8 (50)	
Strongly Agree	6 (37.5)	
"I would have preferred to receive the education in a group setting among other patient with cancer"		2.07 (.99)
Strongly Disagree	5 (31.3)	
Disagree	4 (25)	
Neither	4 (25)	
Agree	1 (6.3)	
"Information about how to manage my side effects of my chemotherapy helped to decrease my anxiety"		4.1 (.62)
Neither	2 (14.3)	
Agree	9 (64.3)	
Strongly Agree	3 (21.4)	
"The orientation to the infusion center helped ease my fears of my first chemotherapy"		4.14 (.53)
Neither	1 (6.3)	
Agree	10 (62.5)	
Strongly Agree	3 (18.8)	

Table 4.5 *cont.*

Patient Satisfaction Survey Results

	n (%)	*M (SD)*
"The location of the education was comfortable and quiet, which helped my focus on learning"		4 (.55)
Neither	2 (12.5)	
Agree	10 (62.5)	
Strongly Agree	2 (12.5)	
"I would recommend this education to be used in the future"		4.3 (.70)
Neither	2 (12.5)	
Agree	7 (43.8)	
Strongly Agree	6 (37.5)	

CHAPTER 5

DISCUSSION

Explanation of Findings

The purpose of this EBP project was to determine if nurse-led patient education regarding side effects of chemotherapy is effective at decreasing anxiety in patients receiving chemotherapy for the first time. Anxiety was measured before, after, and two weeks after the educational intervention using the STAI. A majority (93.3%) of participants felt the educational experience helped decrease their anxiety about their first chemotherapy treatment. The average STAI score before the educational intervention was 42.1 (*sd* = 12.96). To compare this state anxiety with that of the general population, normative data was obtained from the *State-Trait Anxiety Inventory for Adults: Manual, Instrument and Scoring Guide* (Speilberger, 1983*)*. The normative sample that most closely aligned with the demographics of participants in this EBP project consisted of working females ages 50 to 60. This sample reported mean anxiety scores of 32.2, much lower than that of the pre-intervention anxiety experienced by participants (Speilberger, 1983). The average STAI score after the educational intervention measured 37.27 (*sd* = 13.47). Comparison between pre-intervention and post-intervention STAI scores demonstrated a statistically significant difference.

Two weeks after the educational intervention the average STAI score increased minimally to 38.4 (*sd* = 10.55). One possible reason for this finding is the attrition rate for this EBP project. One person did not complete the two week post-intervention STAI, which has potential to impact the results because the sample is so small. Another possible reason for this finding is a potential relationship between the incidence of side effects and level of anxiety. Chemotherapy medication has a small therapeutic window for toxicity and side effect occurrence. As patients receive the second, third, and fourth cycles of treatment, chemotherapeutic medication begins to accumulate in the patient's body. Chemotherapy dosing and scheduling has been developed attempting to appropriately balance a high level of efficacy with a low side effect profile (American Cancer Society, 2013). It is possible that as patients begin to experience more frequent and severe side effects from chemotherapy that their anxiety begins to increase.

Post-hoc analysis revealed a statistically significant decrease in anxiety for pre-intervention and post-intervention scores only (t (15) = 2.730, $p<.05$). This finding is most consistent with findings presented by Williams and Schreier (2005). Williams and Schreier collected comparison data using a control and experimental group measuring anxiety at three different points in time: pre-intervention, one month after the intervention, and three months after the intervention. They found a statistically significant decrease in anxiety between the first and second measurements only. Although reasons for this finding are not discussed in the study, researchers did find that as chemotherapy progressed the incidence of side effects experienced by participants increased. This supports the above mentioned proposition. In addition, as patients experience more side effects and progress through treatment it is expected that new questions and concerns will arise. An increase in anxiety from post-intervention to two weeks post-intervention may indicate a need for more than one educational intervention. One patient on the subjective portion of the satisfaction survey reported a need for education throughout the entire duration of treatment. Likewise, two patients noted that the patient education did not answer all of their questions regarding chemotherapy. However, it is difficult to determine if this is due to a lack of effectiveness of the educational intervention, or if new questions arose during the two weeks following the education.

While post-hoc analysis demonstrated a statistically significant decrease in anxiety from the pre-intervention to the post-intervention only, RM-ANOVA results were statistically significant (F (1,14) = 207.93, $p<.001$). These results are consistent with those reported in the literature. The systematic review performed by Prouse (2010) also found that education regarding chemotherapy side effects decreased anxiety; however, it is difficult to compare results with this SR as there were no collective data presented in the findings, only results of individual studies.

Patient satisfaction of participants in this project are similar to those in studies conducted by Malone (2007) and Mann (2011). A majority (84%) of the participants in Malone's study rated the educational intervention as "excellent" or "good." While further analysis of specific aspects that participants valued most were not included in the findings, verbal responses from the satisfaction survey were provided. Most patients provided comments explaining their satisfaction with the content of education. They felt that they were more prepared for chemotherapy and knew what to expect. Mann (2011) found similar results regarding patient satisfaction. In her pilot study, most patients (88%) in the intervention group (n= 32) reported satisfaction with the educational intervention. Likewise, a majority (93.3%) of patients in this EBP project were satisfied with the educational intervention. Of the four participants who provided written responses on the patient satisfaction survey, three reported that their favorite part about the education was the knowledge they obtained. Patients appreciated learning and understanding the side effects of "what to expect" after having chemotherapy treatments. These satisfaction results are consistent with those found in the literature.

Another finding consistent with those in the literature was the value of the nurse-patient relationship. Three of the four participants who provided comments on the satisfaction survey reported they valued the one-on-one interaction with the nurse. One patient stated that the favorite part about the education was having "someone to help me understand" what to expect about chemotherapy. Mann (2011) also found that patients in both groups of her study rated talking with the nurse as the most helpful aspect of the education. Although Williams and Schreier (2005) used audiotape recordings for their educational intervention as opposed to face-to-face teaching, data collection was performed by the same graduate-level nursing student over the course of the project. Participants who received the education indicated that they enjoyed the telephone surveys as it “gave them a sense of connection” (Williams & Schreier, 2005, p. 143).

All participants in the EBP project received the educational intervention after diagnosis and before their first chemotherapy infusion. As many patients had multiple appointments in many specialty areas (surgery, radiation etc.), finding time to perform the education that was compatible with the project manager’s and the patient’s schedule was often difficult. Therefore, seven patients received education the day of their first examination. While all of the patients were aware of their cancer diagnosis the day of the first examination, most were not aware that they would be receiving chemotherapy. Education on the day of their first examination with the oncologist is not ideal as anxiety is typically elevated. Although education is an effective intervention to decrease anxiety, anxiety often interferes with the patient’s ability to comprehend information (Stephenson, 2006). Thirteen of the 15 participants (86.6%) who completed the patient satisfaction survey reported that the amount of time between the education and their first chemotherapy treatment was good. In the pilot study performed by Mann (2011), the control group, who received education during the first chemotherapy infusion, reported a strong need for education sooner than the day of infusion. None of the participants in this project received education on the same day of their first chemotherapy infusion. Five of the participants received the education the day before their first chemotherapy infusion, and four received the education approximately one week before their first chemotherapy.

Stephenson (2006) discussed the usefulness of the self-regulation theory in providing effective patient education. When patients are first diagnosed with cancer they often experience anxiety related to the diagnosis. Although education is an effective intervention to decrease anxiety, anxiety often interferes with the patient’s ability to retain information. Self-regulation theory helps nurses select the most pertinent information for education to assist with decreasing anxiety. According to self-regulation theory, one of the four concrete variables recommended for discussion during patient education is a description of the environment during the “event” (chemotherapy). Thus self-regulation theory supports the effectiveness of familiarizing patients with the infusion center environment before the first chemotherapy infusion. Results from this project support this idea, as exposing patients to the treatment area and explaining the typical routine was effective at decreasing anxiety. Thirteen participants (81.3%) reported that the orientation to the infusion center helped ease their fears regarding their first chemotherapy experience. This finding supports orientation to the infusion center as a feasible aspect of patient education that utilizes minimal nursing resources. Orientation to the infusion center, brief discussion of the typical procedure of chemotherapy, and acceptable items to bring during infusion are effective methods to decrease anxiety that requires minimal time for nursing staff (Jacobsen & Jim, 2008). In the EBP project the orientation portion of the education took approximately five minutes. Implementation of a brief orientation has the potential to impact psychosocial outcomes and patient satisfaction while utilizing minimal organizational resources.

The educational intervention took place in a quiet examination room. Twelve participants (85.7%) reported that the location of the education was comfortable and quiet, and helped them focus on learning information. This is consistent with the study conducted by Mann (2011), in which all participants reported that the quiet environment was conducive to learning. Malone (2007) also found that a quiet area of the infusion center was more effective at decreasing anxiety, based on reports by participants in a satisfaction survey.

Only one study (Malone, 2007) utilized a group educational format. The reason for selecting this format was not discussed by the researcher and in the conclusion Malone stated that not every patient who was referred to the educational class chose to attend. In addition, there is a scarcity of literature comparing the effectiveness or patient preference of group versus individual education. Group education could allow for better use of organizational resources, such as time and money. Therefore, participants were asked in the satisfaction survey if they would have preferred to receive the education in a group setting among other patients with cancer. A majority (64.3%) of participants disagreed or strongly disagreed with receiving patient education in a group format. This could be a result of the value patients placed on the “one-on-one” connection developed with the nurse providing the education, as evidenced by verbal responses from the patient satisfaction survey. Patients may feel less apt to ask questions in a group setting and therefore have difficulty developing a trusting relationship with the RN. However, support groups have proven to be effective in decreasing anxiety, thus the group setting for patient education should not be disregarded based on these participants’ responses (Sheldon, 2008; Stephenson, 2006). Further research is needed to determine effectiveness of group education at decreasing anxiety.

Evaluation of the Project: Roy’s Adaptation Model

Roy’s Adaptation Model helps healthcare professionals understand how patients adapt to illness and disease. Understanding how patients adapt is important to the nursing profession because it is the role of the nurse to promote healthy adaptation (Galbreath, 2011). There are four major concepts within the RAM: (a) humans as adaptive systems as both individuals and groups, (b) the environment, (c) health, and (d) the goal of nursing. The goal of nursing is the major concept that best aligned with the goals of this EBP project.

The goal of nursing in the RAM is to help patients develop adaptive responses through four adaptive modes: a) physiological-physical, b) self-concept, c) role function, and d) interdependence. The physiological-physical mode deals with the body's physiological responses from stimuli encountered from the environment. Self-concept mode includes the psychological and spiritual well-being of a person. The role function mode involves how a person performs their given role, and interdependence mode applies to the basic need to give and receive love and respect (Galbreath, 2011; Piazza et al., 1992). The goal of nursing is to help promote adaptive responses through the four adaptive modes. One way to do this is through educating patients to increase their knowledge, skills, and abilities (Piazza et al., 1992). Promoting adaptation through education closely aligns with the goals of this EBP project.

A majority of the patient education provided in this EBP project focused on effectively managing alterations in the physiological-physical mode. Anxiety is a common complaint of patients newly diagnosed with cancer, as they fear the unknown side effects of chemotherapy (Borsellino & Young, 2011; Sheldon et al., 2008). Alterations in the physiological-physical mode addressed during education were: (a) constipation, (b) diarrhea, (c) mouth sores, and (d) fatigue. Participants were not only instructed on the likelihood that these side effects would occur, but how to manage these side effects independently.

As nurses provide education to patients on how to effectively manage side effects of chemotherapy, patients are empowered with mechanism to help them adapt. Empowering patients through knowledge to care for themselves maintains self-esteem, fostering the self-concept adaptive mode (Piazza et al., 1992). Increased self-esteem and self-efficacy to care for one's self promotes health adaptation and could potentially decrease anxiety (Piazza et al., 1992). Findings from the EBP project support this idea. Eleven participants agreed and two participants strongly agreed that the education helped them manage their side effects. This suggests that the patient education potentially increased self-efficacy, although this was not measured directly.

Physical alterations related to chemotherapy treatment affects the self-concept mode. Hair loss is a common side effect of chemotherapy and “am I going to lose my hair?” was often the first question asked by participants. The use of scarves and hats were suggested to help maintain self-confidence. Community resources for support, such as the American Cancer Society, and resources to obtain wigs were provided to patients. Some chemotherapy-specific side effects that alter physical appearance include weight loss, fingernail discoloration, fingernail loss, and facial rash. Abraxane, docetaxel, and paclitaxel are chemotherapy medications that were frequently received by participants with breast cancer that cause changes in nail color, appearance, and integrity. Patients were instructed on proper hygiene of fingernails in order to prevent odor and infection. Nausea and vomiting were major topics discussed during the education; resultant weight loss was discussed briefly. Patient education in the literature ranged from 20 minutes to one hour, and in order to keep the patient education session at approximately 30 minutes, weight loss was not discussed. Patients often asked what they were allowed to eat during chemotherapy. Diet restrictions are not standardly recommended for patients receiving chemotherapy; however, when asked the DNP project manager briefly discussed eating during chemotherapy. Generally, a high protein nutrient dense diet was recommended to combat weight loss related to nausea and vomiting. Patients were also advised to supplement meals with over-the-counter nutritional shakes such as Ensure or Boost.

To promote effective adaptation in the interdependence and role function modes, family members and spouses were encouraged to participate in the educational experience. Involving loved ones in the education can help preserve role function modes. Properly assessing primary, secondary, and tertiary roles can help the nurse aid the patient to continue to perform as much of their selected roles as possible (Piazza et al., 1992). Primary roles are roles defined by the patient’s age, sex, and developmental stage, such as a being a 52-year-old male. An example of a secondary role would be a mother, father, sister, brother etc. Tertiary roles are roles related to the secondary roles; such as, baseball coach or volunteer. Perceived failure in performing identified roles can lead to anger and anxiety (Piazza et al., 1992). Family members should be aware of potential side effects related to chemotherapy in order to better understand possible conflicts in performing set roles. Educating family members can help facilitate role transition within the family setting if patients become unable to perform specific roles (Maxwell, Givant, & Kowalski, 2001).

The RAM was a good fit for this project because it provided a way for the project manager to view the patient in a holistic perspective. Oncology patients experience alterations in all four adaptive modes; therefore it is important to focus not only on the physiological alterations of a person, but on all other modes as well. Using the RAM as a guide, this project increased the awareness of psychosocial aspects of care to members of the healthcare team and provided a framework to guide the development and implementation of the project.

While the RAM outlines its own nursing process that is compatible with the adaptive modes within the RAM, its method was not readily utilized during this EBP project. Roy identifies two parts of nursing assessment: assessment of behavior and assessment of stimuli. Assessment of behavior is an assessment of responses from the patient as an adaptive system in relation to the four adaptive modes. Assessment of stimuli is assessed and classified as focal, contextual, or residual. The most applicable stimuli and its related behavior are the two components that formulate a nursing diagnosis (Galbreath, 2011; Piazza et al., 1992). With time constraints in a busy private oncology practice, the amount of time needed to fully assess both areas may be unrealistic. The multiple concepts for the RAM method of the nursing process are unclear and confusing to the nurse wishing to use the RAM.

While the ideal time frame for patient education was after diagnosis and before the first chemotherapy infusion, seven patients received education the day of their first examination with the oncologist, and the other nine received treatment after their first examination but before their first chemotherapy infusion. As explained in earlier sections, anxiety might be heightened as patients discuss treatment options and prognosis with the oncologist. Literature suggests that patient education is most effective when it is performed prior to the initiation of chemotherapy, although a specific time frame is not detailed (ASCO/ONS, 2012; Malone, 2007; Mann, 2011; Stephenson, 2006; Traeger et al., 2012; Williams & Schreier, 2005). As explained in the previous section of this chapter, time constraints for the patient and the project manager affected the timing of patient education.

Evaluation of the Project: Iowa Model of Evidence Based Practice

The purpose of the Iowa model is to provide guidance for health care providers in making clinical decisions that affect patient outcomes (Ciliska et al., 2011). It consists of three decision points that are critical in applying the evidence to a multitude of practice settings. The model consists of seven steps that are outlined in detail in chapter two of this report.

The first step of the Iowa model is to select a topic that closely aligns with the goals of the organization. The EBP project objective closely aligned with the organization’s mission to “provide world class healthcare with compassion” (Premier Oncology Hematology Associates, 2012). The owner of the organization takes pride in obtaining highly educated healthcare professionals to care for patients throughout their cancer journey. Organizational support was enthusiastic during preparation. Nursing staff, physicians, APNs, and the practice owner were enthusiastic about the increased patient satisfaction that may result from this EBP project. The EBP project manager was ensured that organizational resources were available for use during implementation of the project. Organizational support decreased during implementation as any interruption in the typical routine was discouraged from the office manager. However, support from the nursing staff and other health care professionals increased throughout implementation as demonstrated by increased participation. All members of the health care team increased involvement in recruiting participants. The members of the organization failed to successfully integrate EBP project into the organization. The project manager was strongly encouraged to implement the project around the company's current framework of care. Organizational process was altered as health care providers in the organization referred applicable participants for inclusion in the project. While providing the education changed the organization's process in caring for patients, the project manager was the only member of the healthcare team who conducted the education. A “next visit alert” is a charting option frequently utilized in the electronic health record to alert the RN to specific tasks that need to be performed for the patient. This option would have been helpful to alert RNs to collect the two-week post-intervention paperwork to patients during their follow up appointments. Additionally, flagging new patient charts using the “next visit alert” option could have alerted health care providers to potential participants. Use of the “next visit alert” option in the future would alert the nursing staff to patients who need to be educated about their chemotherapy.

Recent cuts in Medicare reimbursement to oncology services may have negatively impacted this organization's participation in the EBP. Stress was placed on the nursing staff to properly document chemotherapy injections and infusions in order to receive prompt reimbursement. Although the project manager was able to perform the patient education, organizational priority switched to focus mainly on insurance reimbursement for expensive chemotherapy medications. While interest in the EBP project increased throughout implementation, participation decreased minimally as insurance reimbursement took precedent over patient education. As mentioned earlier choosing a topic that is a high priority to the organization is important for successful implementation.

The EBP team gained strength throughout the course of implementation. Communication between the project manager and the nursing/medical staff increased to aid in increasing the number of participants in the project. Communication between the project manager and the medical staff via company e-mail, telephone, and face-to-face interactions were utilized to discuss recruitment of potential participants. Ethical issues were considered during communication as patient confidentiality was maintained. Greater involvement of management during the planning stage may have increased enthusiasm for the EBP project. Educating key stakeholders of the organization on the negative effects of anxiety on patient care may have increased the organizational support throughout the entire duration of the project. Although a bottom-up approach is traditionally more successful in implementing evidence-based practice in the workplace; managerial involvement is critical. Without the support of upper level management the health care team may not feel they have the authority to implement EBP changes into practice (Doody & Doody, 2011). Managerial support from the office manager was deficient in this project. This may have been due in part to the lack of education regarding EBP and lack of interest from the office manager. The office manager came from an administrative background and therefore did not have sufficient education regarding evidence-based practice. Managerial support could have been offered through communication with other members of the staff through company e-mail announcing implementation of the EBP project. This support could have potentially increased the compliance with participation in the EBP project.

Individual differences and patient preferences were considered during implementation. Every participant received education that was tailored to his or her specific chemotherapy regimen. This is important as each chemotherapy medication has unique side effects. Tone and volume of voice was altered for one participant who had difficulty hearing due to age related changes. Another participant received the patient education in a quiet area of the infusion center versus an examination room, because he used supplemental oxygen, and this is only provided in the chemotherapy bays. The Iowa model served as a useful instructional tool for project manager throughout the entire course of the EBP project. It allows for the continuous movement towards practice based on the best possible evidence, which is important to provide the highest quality of care.

Weaknesses of the EBP Project

The first major weakness of this EBP project was the small sample size, which decreased the statistical power of the results. Of the 26 patients who were eligible to participate in the EBP project, 15 participants were initially recruited. Most of the 26 eligible patients wished to participate but were unable to due to a couple of factors. Most participates were unable to participate due to the constraints in time as discussed in previous sections. Patients' schedules were too busy with other medical appointments, work, and family obligations making it difficult to arrange a time to meet with the project manager. Two of the participants had transportation issues and one patient had a language barrier. In the future, professional translation services utilized over the telephone would benefit patients with language barriers receiving chemotherapy. Of the original 15 participants recruited, two participants failed to complete the two-week follow-up intervention, one due to noncompliance and one due to mortality. A three-week IRB extension was obtained in order to recruit more participants. One additional participant was recruited during the time of the extension and the previous participant who failed to complete the two-week follow up paperwork due to noncompliance with appointments, eventually completed two-week follow up paperwork. Only one of the total 16 participants did not complete the entirety of the project, an attrition rate of 6.25%. This patient had metastatic colon cancer and was lost to mortality shortly after the educational intervention. The data on all 16 participants were included in the statistical analysis of this project.

The busy nature of the oncology clinic served as a barrier during implementation. The private practice provides care to approximately 80 to 100 patients per day and due to this patient volume it is difficult for a nurse to provide 30 minutes of patient education to individual patients. The average wait time for this organization is an hour and a half, with some patients waiting as long as three hours. Patients were not always willing to participate in the EBP project after enduring long wait times and were not enthusiastic about returning on another day to receive education. The project manager ensured patients that they would endure little to no wait to receive the education, however some patients were reluctant and decided not to participate. A possible solution to improve patient education without causing disruption in care would be to implement measures to increase compliance with patient education among the nursing staff and add a brief orientation to the infusion center for all new patients as a standard of care. This will be discussed in more detail later in this chapter.

The complexity of oncology care presented another challenge. Specific chemotherapy regimens cannot be selected until patients have had appropriate diagnostic and pathological tests performed and results received. Chemotherapy is specific to the pathology results and therefore education was delayed until appropriate treatment plans were created. Some patients agreed to participate in the EBP project and receive the education after the pathology results were received and reviewed. However, some physicians called the patient in for chemotherapy immediately after reviewing results and patients were lost due to the inability to meet with them before they received chemotherapy. Some participants were relatively young with curable disease and treatment was initiated immediately. Some of these patients received chemotherapy the day of their first examination. These patients were then considered not eligible to participate in the project. A majority of the patients received surgery and radiation and therefore had multiple appointments throughout the course of treatment making it increasingly difficult to mutually establish a time for the education.

Some members of the organization were resistant to project implementation and created barriers for the project manager. One APN, not a member of the EBP team, demonstrated resistance by initially refusing to participate in the EBP project. The APN performed an extensive critique of the evidenced-based educational materials selected for the project and was concerned that the project manager did not develop original items as educational materials. The APN openly questioned the validity of the EBP project. In addition, the APN questioned the knowledge and educational background of the project manager. The APN believed that the project manager did not have a highly qualified background to provide patient education. Likewise, the APN questioned the project manager’s future plans in the organization and the intention for employment. This created organizational tension amongst the staff. By neglecting to refer patients to the EBP project or embrace the EBP project this member created a barrier to the EBP project. This barrier needed to be overcome in order to implement the project.

This resistance was overcome using techniques created by John Kotter. Kotter’s Change Management Model provides an eight-step approach to successfully enacting change in an organization. He also presents mechanisms to overcoming resistance to change. Kotter explains that during times of change employees may experience feelings of anger, pride, and pessimism. These feelings were displayed by the APN and can undermine successful change within an organization (Campbell, 2008). Kotter illustrates that while educating employees on the change will create rational and analytical thinking, adopting a “see-feel-change” approach will create the most lasting change (Campbell, 2008, p. 24). In the “see-feel-change approach” the manager educates staff on the problem and uses real life examples in order to generate emotional responses to create change. Creating these emotionally charged behaviors helps employees overcome negative feelings about change (Campbell, 2008). These two methods were used in order to overcome resistance with the APN.

After assessment of the APNs comments and critique, it was determined that a lack of understanding of EBP and the goals of the EBP project was the cause of resistance. A meeting was held between the project manager and the health care provider and the goals and objectives for the EBP project were discussed. Suggestions and criticisms offered by the APN were openly received; however they were not based on evidence, but on tradition. With informal education regarding the process of selecting the evidenced-based materials and topics, the health care provider was able to understand that the educational intervention selected for this EBP project was based on evidence suggesting its effectiveness. In addition, the project manager ensured the APN that she was qualified to provide patient education as an oncology nurse. The project manager provided comments and examples of patients that were struggling with anxiety about their chemotherapy and how this was affecting their quality of life and psychosocial outcomes. This helped transition negative emotional responses into more positive feelings, as suggested by Kotter in his theory. After this meeting the provider became an active participant during implementation through the referral of applicable patients for inclusion in the EBP project.

A few modifications were made during the implementation of the project. Last minute alterations in the patient handout form were requested by the organization manager, which required IRB approval and delayed implementation by one week.

Although the EBP project qualified for exempt review, the office manager requested that the patient handout form state that findings from the project may be used for professional publication, but personal information will remain anonymous. She also requested that patients sign and date the handout and that she be provided with copies once the EBP project had finished.

New patient charts were reviewed in order to determine which oncology patients might possibly receive chemotherapy. The project manager started this process on a week-to-week basis, reviewing all new patient charts Monday morning for the entire week. This proved to be ineffective as there were no patients recruited utilizing this method. The project manager also noticed that reviewing only new patient charts was ineffective at capturing all potential participants. Patients were designated as “new patient exams” if it was their first appointment with the healthcare provider. There were patients who had been seen more than once who were newly diagnosed with cancer; therefore the project manager began doing daily chart reviews on all patient charts. This proved to be more effective as all 16 participants were acquired through this method. It also increased the presence of the project manager as a leader for the EBP project and encouraged participation from other members of the health care team.

As discussed previously it was difficult for the project manager and the patient to find a specified time to meet. This is one reason why implementation of this EBP is not realistic for the organization. Some participants received education the day of, or the day after their first consultation with the oncologist. While most patients were already aware they had cancer, some did not know they were going to receive chemotherapy until their first examination with the oncologist. This may have caused patients to experience higher levels of anxiety that could have potentially impacted learning.

While the project manager was able to perform all of the educational interventions throughout implementation of the EBP project, this is not realistic for future implementation in the organization. It would not be profitable for the organization to hire and pay one nurse to perform patient education only. Instead, this role should be shared by all members of the healthcare team; including nurses, APNs, and physicians. Patient education should start at diagnosis. The treatment plan should be discussed with the patient by the APN or physician before the first chemotherapy infusion. Before leaving their first appointment, potential new chemotherapy patients could be oriented to the infusion center and typical procedures by the RN. If a known chemotherapy regimen is known at the first visit, chemotherapy-specific patient education information should be distributed to the family and the patient. This will provide the family with the opportunity to review the educational materials before the first chemotherapy infusion. On the day of the first chemotherapy infusion nurses can answer questions regarding the chemotherapy infusion and/or distribute patient education materials if not already performed. Nurses should ask patients what information they already know about their chemotherapy infusion. This will assess the patient’s current knowledge and stimulate education regarding chemotherapy. The RN will then provide education tailored to each individual patient’s needs and questions. Chemotherapy-specific side effects should be discussed including information about simple ways for these to be managed at home.

Using the “next visit alert” flagging system in the electronic health record will help remind nurses of patients that need education for their first chemotherapy infusion. Utilization of the “next visit alert system” as a reminder for physicians to recruit eligible participants could have increased the number of participants in the project.

Although there was sufficient evidence supporting education as a means to decrease anxiety, it lacked detail regarding specific aspects of the educational intervention. For example, the ideal time to provide the patient education was not a topic readily addressed in the literature. Although most studies agreed that it should be performed the first chemotherapy infusion, a specific time frame was not described.

Group versus individual education was also not a topic readily discussed throughout the literature.

Strengths of the EBP Project

The educational materials currently used in the organization were used for this EBP project, which was a strength of the project. It was determined that the current educational materials were appropriate for patient education, but were underutilized in the organization. Chemotherapy-specific educational materials from Chemocare.com provided appropriate information regarding chemotherapy medications and potential side effects. The Oncology Patient Education Resources Handbook, created by the organization, also possessed useful information regarding simple ways to manage chemotherapy side effects. The organization used monetary resources to create the handbook, but this resource is rarely provided to patients or their families. This project provided increased awareness of the importance of distributing these educational resources to patients. As mentioned above, utilizing a “next visit alert” to remind nurses to distribute these educational resources will increase compliance with this practice within the organization.

Each educational intervention ran more smoothly as the project manager increased the knowledge base on this topic and became more confident. Some patients were more interested than others to learn about the side effects of their chemotherapy and had multiple questions regarding side effects and the typical procedure of the chemotherapy infusion. For patients with multiple questions the project manager spent more than the 30 minutes for the educational intervention. On average five to ten minutes were spent answering questions from patients and family members. A majority of participants (75%) had family members or loved ones present during the patient education. The project manager noted that family involvement increased the quality of the educational experience. Having family members present increased the amount of questions asked during the educational intervention. Family members also asked questions on tasks they could perform to help their loved one during chemotherapy. Spouses were more apt to ask questions and seek clarification than other members of the family whom were involved.

A major strength of this project included the high rate of patient satisfaction with the educational intervention. Not only did results suggest that the educational intervention was effective at decreasing anxiety, but patients indicated on the satisfaction survey that they truly enjoyed the education and found it helpful. A majority (93.3%) of participants agreed or strongly agreed that they were satisfied with the educational intervention.

The educational intervention will not be adopted into standard practice for the organization. As explained earlier the complex specialty of oncology makes it increasingly difficult for patients to receive education before the first day of their chemotherapy. Although this EBP will not be adopted by the organization, there are ways that the organization can improve patient education. One proposed method is to create a standard a care for patient education within the organization. Currently, the Oncology Patient Education Resources Handbook is supposed to be given to all new patients in the practice. In addition, educational handouts from chemocare.com regarding each chemotherapy medication are given to patients on their first day of chemotherapy infusion. However both of these practices are rarely performed and there is currently no way to document these tasks. One way to increase this practice would be to utilize the “next visit alert” system in the electronic health record to remind the nursing staff to distribute these materials to patients. In addition, expectation of proper documentation in the patient’s EMR would increase accountability of these tasks.

As discovered during this EBP project it is difficult for some patients to make a separate appointment before their first chemotherapy infusion solely for patient education. Therefore all patients receiving chemotherapy for the first time should receive chemotherapy-specific patient education handouts from chemocare.com. The nurse administering the first chemotherapy infusion should also ensure that the patient has received the Oncology Patient Education Resources Handbook. Assessing patients' current knowledge of chemotherapy fosters individually tailored education specific to the patients' educational needs. Appropriate methods of documenting this education should be included in the electronic health record. One potential place for documenting patient education is in the medication administration record (MAR), where nurses document the chemotherapy infusion. Not only should the education be charted, but patients' comprehension of the education should also be described. This will potentially increase compliance with patient education from the nursing staff.

In addition, patients should also receive a brief orientation to the infusion center before their first chemotherapy infusion. Results from the project and literature support orientation to the infusion center as an effective method for decreasing anxiety that utilizes a minimum amount of resources (Jacobsen & Jim, 2008). During an already scheduled visit and before patients receive chemotherapy the healthcare provider should instruct a member of the nursing staff to briefly explain the typical procedure for chemotherapy. Orientation to the infusion center can be included in the electronic health record as an order from the physician to be completed before the patient leaves the office. The RN should provide a short orientation to the infusion center and items that the patient may bring during infusion. The orientation process should take no longer then ten minutes.

Future Implications

Practice

Practice implications for this EBP project focus on the role of the RN as a patient educator in the outpatient oncology setting. Nurse-led patient education was effective at decreasing anxiety for patients in this EBP project. This finding was consistent throughout the literature as well. Participants valued the support provided by the nurse during educational sessions. The nurse-patient relationship significantly impacts the patient’s psychosocial well-being and a trusting relationship can decrease anxiety (Malone, 2007; Mann, 2011; NCCN, 2013; Williams & Schreier, 2005).

In the future, physicians could order “orientation” as a task to be completed by the RN before the patient leaves the first appointment and before receiving the first chemotherapy infusion. If a chemotherapy regimen is known at the first examination, physicians will also order the RN to distribute the educational materials to the patient. RNs should answer initial questions from patients and encourage them to review educational materials before their first chemotherapy infusion. These two tasks will be documented in the patient’s electronic health record. When patients return for their first chemotherapy infusion the RN can spend time answering questions and clarifying information with patients. This will improve current practice by increasing the consistency with which educational materials are provided. Accountability can then be monitored through appropriate use of the electronic health record. Documentation of patient education and comprehension creates accountability for this task as it becomes a new standard of care.

A proper way to chart patient education should be established in this setting as well. Currently education is not consistently documented in the patient’s chart. If performed, the APN or physician documents it in in their plan and RNs do not document patient education at all. Nursing and office management should work together to determine an effective and consistent method to document patient education including topics discussed, patient understanding, and length of education. As mentioned previously a potential place for documentation is in the patients MAR. This can provide a more consistent way for the organization to track how patients are educated and can generate data for the organizations use to determine compliance with a new standard of care.

Theory

This EBP project is guided by theory regarding adaptation. Theory is a systematic method to describe phenomena (Hickman, 2011). Anxiety is viewed as a maladaptive response to stimuli; therefore methods to decrease anxiety are important to the RAM. Theory development occurs through different methods, although research is the most commonly accepted method. When research findings are consistent over multiple studies, theories develop and evolve (Peterson, 2009). As this project exhibited consistent findings with the literature, it provides for an increased database of knowledge to increase the utility of the RAM in everyday nursing practice.

Research

Results obtained from this EBP project build upon existing knowledge and lead the profession towards areas that may need further development. Future EBP projects of similar magnitude might focus on expanding educational sessions for a series of weeks, as this was suggested by participants in this EBP project. Measurement of patient knowledge might also be useful to determine the effectiveness of the education. In addition, measuring other aspects of patient care such as quality and quantity of side effects experienced, hospitalizations, and complications would be useful to determine the effect of these events on anxiety levels.

Many people in the satisfaction survey stated that they preferred to receive the education individually as opposed to in the group setting. Further research is needed that compares group versus individual educational sessions as this topic was also lacking in the literature. Group education can maximize the use of organizational resources; therefore it is important to know if it is effective.

Education

This EBP project provides direct implications for nursing and patient education. The role of the nurse as educator should remain significant to nursing education. All nursing professionals in oncology should perform continuing education to remain adequately educated regarding new chemotherapy medications and indications. Managers should encourage nursing staff to obtain and renew specialty oncology certifications. Nursing should make it their mission to ensure patients have the proper educational materials and answer questions regarding concerns about chemotherapy side effects. Nurses should serve as patient advocates promoting holistic care (NCCN, 2013; Schofield et al., 2008).

Conclusion

The primary outcome for this EBP project was decreased anxiety for patients receiving their first chemotherapy infusion. Results from this project are consistent with the literature and demonstrate that patient education is effective at decreasing anxiety in patients receiving chemotherapy for the first time. Oncology patients who experience less anxiety are better able to manage side effects of chemotherapy and therefore may potentially experience less adverse effects and complications. Decreased anxiety can improve the psychosocial outcomes of patients throughout chemotherapy treatment and increase quality of life (Iconomou et al., 2006; Williams & Schreier, 2004).

Since 2007, the Institute of Medicine (IOM) has considered psychosocial health an aspect of quality cancer care and states that psychosocial interventions should be integrated into routine practice (NCCN, 2013). The NCCN (2013) suggests screening for anxiety should be implemented in community oncology practices. Instituting nursing measures to decrease anxiety related to chemotherapy treatment is one way oncology nurses can integrate psychosocial care into their existing framework. Holistic nursing care includes providing education about treatment side effects and self-care behaviors as a means of reducing anxiety (ASCO/ONS, 2012; Malone, 2007; Mann, 2011; NCCN, 2013; Prouse, 2010; Sheldon et al., 2008; Stephenson, 2006; Williams & Schreier, 2005).

Certain aspects of patient education should be considered for the development or revision of patient education programs. Evidence suggests that RN’s are appropriate health care professionals to lead educational sessions. Although time is a severely limited factor in this specialty area, RNs at a minimum can ensure that all patients receive the necessary resources for patient education. When patients receive the educational materials before their first infusion they may come prepared with questions to discuss with the nurse. The American Cancer Society and Chemocare.com provide credible patient education resources, including patient hand-outs regarding chemotherapy and side effect management. In addition, all patients should receive an orientation to the infusion center before their first chemotherapy infusion.

As leaders of change, RNs should advocate for holistic care and encourage the use of education as a means to improve psychosocial health of patients. Nurses must engage in continuing education regarding new chemotherapy medications and evidence-based strategies to manage side effects to remain effective patient educators.

This EBP project demonstrates that when done appropriately, patient education is effective at preventing and reducing anxiety in patients receiving chemotherapy for the first time. Adequate time with a RN discussing side effects of treatment and management strategies before the first chemotherapy infusion helps ease worry. A brief orientation to the infusion center and expectations for the treatment day greatly decreases fear of the “unknown.” Results from this EBP project are consistent with findings from the literature. . While the educational intervention created in this project is ideal for patient education to be most effective, it is not realistic in this organization. This private organization was too busy to continue the use of this EBP. However, the organization can integrate aspects of the new practice such as an orientation to the infusion center for all patients as this utilizes a minimum amount of organizational resources. This project has increased awareness of the importance of patient education in holistic care for oncology patients. In addition, the educational materials in the organization were utilized more effectively and their value is now more known. As integration of psychosocial care into practice progresses, mechanisms for increasing quality of life and improving psychosocial outcomes are of increasing importance to nurses (NCCN, 2013).

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BIOGRAPHICAL MATERIAL

Sarah L. Garcia

Ms. Garcia first discovered her passion for healthcare while completing nurse vocational training in high school. Inspired by her vocational experience, Sarah began her first job in nursing as a certified nurses' assistant on a hematology/oncology floor at Porter Hospital in Valparaiso. It was here she discovered her passion for the art of nursing. Sarah completed her bachelors of science of nursing in May 2011 at Valparaiso University. Sarah's experience as a nurse in a private oncology clinic prompted her to further her education and she is currently attending Valparaiso University, on track to achieve her DNP in May 2014. Ms. Garcia is a member of Sigma Theta Tau International, Zeta Epsilon Chapter and the Oncology Nursing Society. She was a recipient of the Walgreens retail health award for her special interest in retail medicine and her manuscript, The Effects of Patient Education on Anxiety Levels in Patient's Receiving Chemotherapy for the First Time: An Integrative Review, was accepted for publication in "The Clinical Journal of Oncology Nursing". Sarah has dedicated her entire nursing career to the care of the oncology patient and has special interests in psychosocial care of this patient population.

ACRONYM LIST

AGREE II: Appraisal of Guidelines for Research and Evaluation II

APNs: Advance practice nurses

ASCO: American Society of Clinical Oncology

CASP: Critical Appraisal Skills Programme

CINAHL: Cumulative Index to Nursing and Allied Health Literature

DT: Distress Thermometer

EBP: Evidence-based practice

EMR: Electronic Medical Record

IOM: Institute of Medicine

IRB: Institutional Review Board

JBI: Joanna Briggs Institute

JBI-MASTARI: Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument

JBI-NOTARI: Joanna Briggs Institute Narrative Opinion and Text Assessment and Review Instrument

NCCN: National Comprehensive Cancer Network

NIH: National Institute of Health

ONS: Oncology Nursing Society

RAM: Roy Adaptation Model

RCT: Randomized Control Trial

RN: Registered Nurse

SCB: Self Care Behaviors

SCD: Self Care Diary

SOC: Standard of Care

SR: Systematic Review

STAI: State-Trait Anxiety Inventory

Appendix A

TAXOTERE

Generic Name: Docetaxel

Drug Type:

Taxotere is an anti-cancer ("antineoplastic" or "cytotoxic") chemotherapy drug. Taxotere is classified as a "plant alkaloid," a "taxane" and an "antimicrotubule agent." (For more detail, see "How Taxotere Works" section below).

What Taxotere Is Used For:

- Approved in treatment of breast cancer, non-small cell lung cancer, advanced stomach cancer, head and neck cancer and metastatic prostate cancer.
- Also being investigated to treat small cell lung, ovarian, bladder, and pancreatic cancers, soft tissue sarcoma and melanoma.

Note: If a drug has been approved for one use, physicians may elect to use this same drug for other problems if they believe it may be helpful.

How Taxotere Is Given:

- Taxotere is given through a vein (intravenously, IV)
- There is no pill form of Taxotere
- Premedication with a corticosteroid pill starting a day prior to Taxotere infusion for 3 days is given to reduce the severity of fluid retention and allergic reactions. Your doctor will prescribe the exact regimen.
- The amount of Taxotere that you will receive depends on many factors, including your height and weight, your general health or other health problems, and the type of cancer or condition being treated. Your doctor will determine your dose and schedule.

Taxotere Side Effects:

Important things to remember about Taxotere side effects:

- Most people do not experience all of the Taxotere side effects listed
- Taxotere side effects are often predictable in terms of their onset and duration
- Taxotere side effects are almost always reversible and will go away after treatment is complete
- There are many options to help minimize or prevent Taxotere side effects
- There is no relationship between the presence or severity of Taxotere side effects and the effectiveness of Taxotere.
- Taxotere side effects and their severity depend on how much Taxotere is given. In other words, high doses of Taxotere may produce more severe side effects).

The following Taxotere side effects are common (occurring in greater than 30%) for patients taking Taxotere:

- Low white blood cell count (this can increase your risk for infection)

- Low red blood cell count (anemia)

Nadir: Meaning low point, nadir is the point in time between chemotherapy cycles in which you experience low blood counts.

Onset: 4-7 days Nadir: 5-9 days Recovery: 21 days

- Fluid retention with weight gain, swelling of the ankles or abdominal area.
- Peripheral neuropathy (numbness in your fingers and toes) may occur with repeated doses. This should be reported to your healthcare provider.
- Nausea
- Diarrhea
- Mouth sores
- Hair loss
- Fatigue and weakness
- Infection
- Nail changes (color changes to your fingernails or toenails may occur while taking Taxotere. In extreme, but rare, cases nails may fall off. After you have finished Taxotere treatments, your nails will generally grow back.)

These Taxotere side effects are less common, meaning they occur in 10-29 percent of patients receiving Taxotere:

- Vomiting
- Muscle/bone/joint pain (myalgias and arthralgias)
- Low platelet count (This can increase your risk of bleeding)
- Increases in blood tests measuring liver function. These return to normal once treatment is discontinued. (see liver problems)

Infusion-related Taxotere side effects (symptoms which may occur during the actual treatment) include:

- Allergic reactions (rash, flushing, fever, lowered blood pressure). Happens rarely, usually occurs in the first or second infusion. Frequency is reduced by premedication with corticosteroid starting one day before infusion. You will be monitored closely during the infusion for any signs of allergic reaction.
- Infusion site reactions (uncommon and generally mild, consist of darkening of the vein, inflammation, redness or dryness of the skin, or swelling of the vein).

Not all Taxotere side effects are listed above, some that are rare (occurring in less than 10% of patients) are not listed here. However, you should always inform your health care provider if you experience any unusual symptoms.

When To Contact Your Doctor or Health Care Provider:

Contact your health care provider immediately, day or night, if you should experience any of the following symptoms:

- Fever of 100.4° F (38° C) or higher, chills (possible signs of infection)

The following symptoms require medical attention, but are not an emergency. Contact your health care provider within 24 hours of noticing any of the following:

- Nausea (interferes with ability to eat and unrelieved with prescribed medication).
- Vomiting (vomiting more than 4-5 times in a 24 hour period).

- Diarrhea (4-6 episodes in a 24-hour period).
- Unusual bleeding or bruising.
- Black or tarry stools, or blood in your stools or urine.
- Extreme fatigue (unable to carry on self-care activities).
- Mouth sores (painful redness, swelling or ulcers).
- Yellowing of the skin or eyes.
- Swelling of the ankles. Weight gain. Swelling of the stomach.
- Shortness of breath.

Always inform your health care provider if you experience any unusual symptoms.

Taxotere Precautions:

- Before starting Taxotere treatment, make sure you tell your doctor about any other medications you are taking (including prescription, over-the-counter, vitamins, herbal remedies, etc.). Do not take aspirin, products containing aspirin unless your doctor specifically permits this.
- Do not receive any kind of immunization or vaccination without your doctor's approval while taking Taxotere.
- Inform your health care professional if you are pregnant or may be pregnant prior to starting this treatment. Pregnancy category D (Taxotere may be hazardous to the fetus. Women who are pregnant or become pregnant must be advised of the potential hazard to the fetus).
- For both men and women: Do not conceive a child (get pregnant) while taking Taxotere. Barrier methods of contraception, such as condoms, are recommended. Discuss with your doctor when you may safely become pregnant or conceive a child after therapy.
- Do not breast feed while taking Taxotere.

Taxotere Self Care Tips:

- You may be at risk of infection so try to avoid crowds or people with colds or not feeling well, and report fever or any other signs of infection immediately to your health care provider.
- Wash your hands often.
- To help treat/prevent mouth sores, use a soft toothbrush, and rinse three times a day with 1/2 to 1 teaspoon of baking soda and/or 1/2 to 1 teaspoon of salt mixed with 8 ounces of water.
- Use an electric razor and a soft toothbrush to minimize bleeding.
- Avoid contact sports or activities that could cause injury.
- To reduce nausea, take anti-nausea medications as prescribed by your doctor, and eat small, frequent meals.
- Avoid sun exposure. Wear SPF 15 (or higher) sunblock and protective clothing. Drink at least two to three quarts of fluid every 24 hours, unless you are instructed otherwise.
- In general, drinking alcoholic beverages should be kept to a minimum or avoided completely. You should discuss this with your doctor.
- Get plenty of rest.
- Maintain good nutrition.
- If you experience symptoms or side effects, be sure to discuss them with your health care team. They can prescribe medications and/or offer other suggestions that are effective in managing such problems.

Monitoring and Testing While Taking Taxotere: You will be checked regularly by your health care professional while you are taking Taxotere, to monitor side effects and check your response to therapy. Periodic blood work to monitor your complete blood count (CBC) as well as the function of other organs (such as your kidneys and liver) will also be ordered by your doctor.

How Taxotere Works: Cancerous tumors are characterized by cell division, which is no longer controlled as it is in normal tissue. "Normal" cells stop dividing when they come into contact with like cells, a mechanism known as contact inhibition. Cancerous cells lose this ability. Cancer cells no longer have the normal checks and balances in place that control and limit cell division. The process of cell division, whether normal or cancerous cells, is through the cell cycle. The cell cycle goes from the resting phase, through active growing phases, and then to mitosis (division).

The ability of chemotherapy to kill cancer cells depends on its ability to halt cell division. Usually, the drugs work by damaging the RNA or DNA that tells the cell how to copy itself in division. If the cells are unable to divide, they die. The faster the cells are dividing, the more likely it is that chemotherapy will kill the cells, causing the tumor to shrink. They also induce cell suicide (self-death or apoptosis).

Chemotherapy drugs that affect cells only when they are dividing are called cell-cycle specific. Chemotherapy drugs that affect cells when they are at rest are called cell-cycle non-specific. The scheduling of chemotherapy is set based on the type of cells, rate at which they divide, and the time at which a given drug is likely to be effective. This is why chemotherapy is typically given in cycles.

Chemotherapy is most effective at killing cells that are rapidly dividing. Unfortunately, chemotherapy does not know the difference between the cancerous cells and the normal cells. The "normal" cells will grow back and be healthy but in the meantime, side effects occur. The "normal" cells most commonly affected by chemotherapy are the blood cells, the cells in the mouth, stomach and bowel, and the hair follicles; resulting in low blood counts, mouth sores, nausea, diarrhea, and/or hair loss. Different drugs may affect different parts of the body.

Taxotere belongs to a class of chemotherapy drugs called plant alkaloids. Plant alkaloids are made from plants. The vinca alkaloids are made from the periwinkle plant (catharanthus rosea). The taxanes are made from the bark of the Pacific Yew tree (taxus). The vinca alkaloids and taxanes are also known as antimicrotubule agents. The podophyllotoxins are derived from the May apple plant. Camptothecan analogs are derived from the Asian "Happy Tree" (Camptotheca acuminata). Podophyllotoxins and camptothecan analogs are also known as topoisomerase inhibitors. The plant alkaloids are cell-cycle specific. This means they attack the cells during various phases of division.

- Vinca alkaloids: Vincristine, Vinblastine and Vinorelbine
- Taxanes: Paclitaxel and Taxotere
- Podophyllotoxins: Etoposide and Tenisopide
- Camptothecan analogs: Irinotecan and Topotecan

Antimicrotubule agents (such as Taxotere), inhibit the microtubule structures within the cell. Microtubules are part of the cell's apparatus for dividing and replicating itself. Inhibition of these structures ultimately results in cell death.

Note: We strongly encourage you to talk with your health care professional about your specific medical condition and treatments. The information contained in this website is meant to be helpful and educational, but is not a substitute for medical advice.

Appendix B

Educational outline

1. Review chemotherapy medications
    a. Patient will be instructed on what chemotherapy medications they are going to receive
    b. Duration of chemotherapy infusion
2. Review possible side effects, coping strategies, and side effect management techniques
    a. Nausea & Vomiting
    b. Diarrhea
    c. Constipation
    d. Mouth sores
    e. Neuropathy
    f. Hair loss
    g. Fatigue
        i. These strategies include simple strategies for patients to management side effects (increasing fiber and fluid intake for constipation), as listed in the patient education handbook
3. Tour of infusion center
    a. Items patient may want to bring (Snacks, pillows, blankets, headphones etc.)
    b. Typical procedure for chemotherapy days (CBC, orders from physician/NP etc. before chemotherapy is administered)
    c. Location of bathrooms
    d. Introduction to staff available during tour

*patients will be encouraged to read the patient education booklet in it’s entirety as only the above portions (side effects) will be covered in the educational intervention.

Appendix C

Hello, my name is Sarah Garcia. In addition to working at Premier Oncology/Hematology as a nurse I am finishing my doctorate degree at Valparaiso University. I am currently doing a project that looks at ways to decrease patients' anxiety about their first chemotherapy infusion and am looking for patients to participate.

If you choose to participate in this project you will receive approximately 30 minutes of free one-on-one education. This education will include helpful information about your chemotherapy, side effects of the medicine, and ways that you can manage these side effects. This education will take place approximately one week before your first chemotherapy infusion.

If you wish to participate in my project, you will be asked to complete the State-Trait Anxiety Inventory before, after, and two weeks following the education. This is a short questionnaire that helps measure anxiety and will take you approximately 15 minutes to complete. You will also be asked to complete a satisfaction survey two weeks following the education. The satisfaction survey will also take you approximately 5 minutes to complete. The findings of this project may be used for professional publication to improve patient care; however, personal information will remain anonymous. Thank you.

Appendix D

Demographic Sheet

Project number________

Gender___________ DOB___________ Age_____________

O: Married O: Single O: Divorced O: Widowed

Race/Ethnicity

O: Asian O: Hispanic O: Caucasian O: African American

O: Native American O: European

1. What is the highest level of schooling you have completed?

O: Elementary School

O: Middle School

O: High school

O: GED

O: Associates degree

O: Bachelors degree

O: Master's degree or higher

2. Diagnosis

O: Breast cancer

O: Lung cancer

O: Colon/Rectal cancer

O: Head and Neck cancer

O: Cervical cancer

O: Endometrial cancer

O: Esophageal cancer

O: Leukemia

O: Myelodysplastic Syndrome

O: Gastric cancer

O: Liver cancer

O: Kidney cancer

O: Ovarian cancer

O: Prostate cancer

O: Testicular cancer

O: Malignant Melanoma

O: Multiple myeloma

O: Lymphoma

O: Other, please specify____

Is your disease metastatic? O: yes O: no

3. Goal of Therapy

O: Curative O: Palliative O: Control

4. Chemotherapy Regimen____

5. Have you ever been diagnosed with cancer before? O: yes O: no

If yes, please provide type and year of diagnosis___________________________

6. Have you received chemotherapy before? O: yes O: no

If yes, how long ago did you receive treatment? ______________________________

What medications did you receive?____

7. Have you ever been diagnosed with an anxiety disorder? O: yes O: no

If yes, please select appropriate diagnosis:

O: Generalized anxiety disorder O: Panic disorder

O: Obsessive/compulsive disorder O: Social anxiety disorder

O: Phobia….(Please provide specific phobia)_____________________

8. Are you currently taking medications to decrease anxiety?

O: Xanax (Alprazolam) O: Valium (Diazepam)

O: Klonopin (Clonazepam) O: Ativan (Lorazepam)

O: Other________________________ O: none

9. Date patient is scheduled to receive first chemotherapy infusion____________________

10. Date of education_______________________________

Appendix E

Patient Satisfaction Survey

Thank you for participating in this project. Please take a moment of your time to rate your experience. Please read each item carefully.

1. I am satisfied with the educational experience.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

2. The education answered all of my questions about my chemotherapy.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

3. The amount of time between the education and my first chemotherapy treatment was good.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

4. The information helped me manage my side effects of chemotherapy.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

5. The educational experience helped decrease my anxiety, worry, and fear about my first chemotherapy treatment.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

6. I would have preferred to receive the education in a group setting among other patients with cancer.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

7. Information about how to manage the side effects of my chemotherapy helped to decrease my anxiety.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

8. The orientation of the infusion center helped ease my fears of my first chemotherapy treatment.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

9. The location of the education was comfortable and quiet, which helped me focus on learning information.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

10. I would recommend this education to be used in the future for this organization.

1	2	3	4	5
Strongly disagree	disagree	neither	agree	strongly agree

My favorite part about the education was____

____

____

Suggestions for improvement____

____

____

____