THE RELATIONSHIP AMONG FACTORS OF INTERDISCIPLINARY GROUP CARE AND PATIENT PAIN IN THE HSOPICE SETTING

by

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ABSTRACT

For those facing serious illness, relief from suffering related to the pain is crucial in supporting the individual goal for quality of life. The complexity of treating pain within a hospice setting is challenging and requires a holistic approach supported through an interdisciplinary (IDG) group effort. The aim of this study was to explore the benefits of interdisciplinary types and number of interventions and pain control with measurements of pain at admission, and 96-hour for patients on hospice services. The method used was a quantitative retrospective observational approach to chart review over a 3-month analysis period of all patients admitted to hospice with a self-reported pain level of a 4 or greater. Research questions included analysis of the types and number of IDG interventions, assessment as to if these interventions had a beneficial effect on self-reported pain within 96-hours of admission to hospice, differences in self-reported pain levels after interventions were provided, and differences in pain relief experiences within 96-hours for different hospice settings. While the results found that the type and number of IDG patient care interventions did not predict a change in self-reported pain levels and that the change in pain levels did not differ based on the setting, the pain level improved for all patients regardless of the hospice setting.

DEDICATION

The dedication of my dissertation is to my supportive husband and children who have encouraged my educational endeavors to reach a successful completion of my doctorate studies and reminded me of the importance of following my aspiration to become a practicing doctoral member of society. The encouragement provided by my children, Annette, Patrick, and Kristen, to pursue my vision of professional excellence through attainment of my doctoral degree has helped me remain dedicated to further my educational journey.

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Introduction

Hospice, as an organization, provides autonomous compassionate care to individuals who have a projected life expectancy of approximately six months should their illness take its anticipated course of decline. The patient and their families have exhausted curative measures and are seeking possibilities for maintaining or improving quality of life (Hospice Foundation of America, 2017). Hospice care is based on a concept that supports the spirituality and dignity for patients (Chochinov et al., 2013) with a life-limiting illness while providing for their medical care including management of pain (National Hospice and Palliative Care Organization [NHPCO], 2014). The services provided by hospice for end of life individuals and their families are offered within the environment wherever the individual resides: homes, hospitals, nursing or rehabilitation facilities, assisted living facilities, and hospice specific care facilities (Mayo Clinic, 2017, NHPCO, 2015). It is essential to promote autonomy at the end of life by supporting the decisions of patients and families in choosing their designated place of care and the interventions that best meet their goals and needs. Teams of healthcare professionals are trained to "identify and provide interventions that relieve the burdens experienced at the end of life by applying empathy, active listening, and dignity-affirming therapies" (Freeman, 2015, p.15).

The care offered by hospice relies on the collaboration of an interdisciplinary group (IDG) to provide comprehensive and compassionate care for patients while supporting the unique individual holistic hospice experience and the desire for self-determination. Petri (2010) defines the purpose of an IDG as a collaborative effort between group members rather than individual practices. An IDG assists the patient and family in the establishment of common objectives providing an interdependent pathway to attain goal-specific patient or family needs. Promotion of open communication, flexibility, and synchronization of interdisciplinary interventional roles can improve a hospice patient's end of life experience (Smith, 2000). Objectives of the Interdisciplinary Group (IDG) are patient and family-directed and seek the individualized input for the end of life care through open communication (Freeman, 2015).

Core group members of the IDG include the physician, nurse, social worker, and chaplain (Medicare Benefit Policy Manual, 2013). Supportive group members may provide complementary/ integrative therapies such as music therapy for the patient and family. Each member maintains a distinctive discipline-specific role while working within a collaborative team environment. Medicare Hospice Conditions of Participation (NHPCO, 2015) requires core group members to provide continuity of care that transcends emotional, spiritual, psychosocial, and physical requirements of the terminally ill patient. The collaborative effort of the IDG highlights the expertise of individual members who provide quality healthcare for end of life (EOL) patients (Center for Medicare & Medicaid Services, 2016).

A goal shared by all members of the IDG is to improve patient outcomes through the management of pain in a timely fashion. To accomplish this goal, a member of the IDG provides a prompt and accurate assessment of pain upon admission to hospice to direct the implementation of interventions. The National Hospice and Palliative Care Organization (NHPCO) found in 2016, of the 1.4 million Medicare-enrolled hospice patients, approximately 40.5% of patients were discharged within two weeks of admission and identified that about 27.9% died within seven days (NHPCO, 2018). Patients who stay an average of seven days from admission to hospice services require rapid interventions to improve quality of life (Teno, Casarett, Spence & Connor, 2012). This limited time for treating a hospice patient's pain requires productive collaborative group discussion and interventions. Because approximately one-third of all patients expire within seven days of admission to hospice services (NHPCO, 2018) the time to provide interventions focused on pain is limited.

The IDG develops a patient care plan based on a comprehensive and holistic assessment of the newly admitted hospice patient. The National Consensus Project for Quality Palliative Care (2013) recommends a comprehensive interdisciplinary assessment with initial and subsequent assessments carried out through interviews, record review, lab, diagnostics, and physical evaluation. As part of a holistic plan of care, each member of the IDG must provide individualized care that reflects the standards of practice for their discipline (National Consensus Project for Quality Palliative Care, 2013). A collaborative health care plan to promote pain relief is based on individual patient goals, values, preferences, and needs (Miller, 2007). In the hospice setting the treatment plan requires supportive collaboration, group discussions, and decision processes that support the patient and family. The IDG core group members are allowed up to five days of election of hospice benefits to complete the comprehensive assessment of a patient under Medicare regulation Condition of Participation (CoP) 418.104(b) (Centers for Medicare and Medicaid Services, 2016). The five-day flexibility for IDG assessment of patient needs may result in a delay in interventions to address pain. Any delay in IDG interactions with the newly admitted hospice patient may result in the patient not receiving the full benefit of hospice care to meet the dynamic changes that occur at the end of life. Patients at the end of life require aggressive and timely interventions to promote comfort and dignity. Hospice philosophy is based on the promotion of quality of life measures that lead to a peaceful death by focusing on the physical, emotional, and spiritual needs of the patient in the final stages of life (Kuntz, 2006).

Gaps in the literature indicated a need for research to identify what factors constitute IDG care of the hospice patient, including type and timing of the interventions provided by the IDG and the effect of IDG interventions on patient self-reported pain. The study was completed to improve the body of knowledge and contribute to the improvement in pain management for hospice patients. Identification of what constitutes the IDG approach to patient care as provided by a group of physicians, nurses, social workers, and chaplains has the potential to improve collaborative care in the hospice setting. Additionally, the study assisted in the identification of the relationship of factors of the IDG approach and the patients' self-reported pain increasing effective pain control for hospice patients' while maintaining the patient goal for improved quality of life.

The nurse, as a member of the IDG, has a primary role in the coordination of care and communicating with the IDG. Feedback is provided by the nurse during IDG meetings, and as needed, to ensure the group responds to patient needs within the shortest time frame. In the hospice setting, the nurse supports physician directives in provision of care. On admission to hospice, the nurse serves as the primary contact for the terminally ill patient, assesses pain levels and facilitates connections with other disciplines to improve EOL care (Marcil, 2006).

Hospice and home health organizations are cognizant of controlling costs while providing quality care for patients and their families. The National Hospice and Palliative Care Organization (NHPCO) must adhere to an aggregate cap on spending for patient care as specified by the Center for the Medicare and Medicaid Services amount that is set each year (CMS, 2020; NHPCO, 2020). Medicare limits reimbursement entitlements related to the hospice cap period and requires repayment for services should the cap be exceeded (CMS, 2020). The hospice cap for 2020 indicates an overall 2.6% increase in Medicare reimbursement for services while reducing payment for Routine Home Care (RHC) by 2.72% (NHPCO, 2020). With most elderly patients preferring to die at home (Bhutia, L., & Devi, 2019), the focus on value-based care will require hospices to develop creative and innovative methods to meet the desires and needs of patients at the end of life.

New Medicare reimbursement requirements provide incentives for increased interdisciplinary interventions during the first 60 days post-admission, and the last seven days of a patient's life. A higher rate of reimbursement for services occurs during the first 60 days of hospitalization (U.S. Department of Health and Human Services, 2016). The U.S. Department of Health and Human Services placed into effect on January 1, 2016, a Medicare service intensity add-on payment also known as a U curve payment system. This payment system was in addition to the daily per diem reimbursement rate which provides additional direct patient care by the nurse and social worker focusing on the patient's last seven days of life (Department of Health and Human Services, 2016). This change in billing practices increases the need for adequate pain management within a structured and limited timeframe. Demonstrating appropriate utilization of services for the hospice patient is vital in meeting Medicare reimbursement and quality care requirements. An estimation by the Center for Medicare and Medicaid Services is that there will be a 2.1 percent increase of $350 million in Medicare payments for 2017 (Centers for Medicare and Medicaid Services (CMS), 2016). With over one-third of Medicare funding going toward the care of hospice patients, quality of care is a fundamental priority (Kuehn, 2009). Meeting quality measures such as screening, assessing, and treating pain, are required to receive maximum reimbursement for hospice services (CMS, 2016). Controlling cost while providing quality care in a timely fashion requires interdisciplinary interventions to improve quality of life. Justification of beneficence is necessary for Medicare dollars spent on the care provided to hospice patients and requires evidence-based supportive research (Kuehn, 2009). The study sought to describe the number and type of IDG interventions and their relationship to the change in the self-reported level of pain of hospice patients from admission to 96-hours following admission.

The focus of the study on the first 96-hours of admission to hospice was based on the short length of stay for hospice patients (NHPCO, 2018) and the need for timely pain management interventions. While the IDG approach to patient care is required by hospice policy, the exact type and number of patient interventions are not prescribed and have not been identified. Measurement of the change in the self-reported pain level following timely IDG interventions offers the potential to improve patient pain outcomes at end-of-life. Provision of efficient and timely multidisciplinary patient interventions may allow healthcare organizations to reduce the use of pharmacological interventions to promote pain management (Guarneri, Horrigan, & Pechura, 2010).

The predictor variables in the study were the type and number of IDG interventions which included services from the physician, nurse, social worker, chaplain, and/or music therapist. specifically, the types and number of patient care interventions provided by any member of the IDG were described and measured as predictor variables. The number of patient interventions was a numeric scale of measurement and appropriate for retrospective descriptive analysis using parametric testing. The types of patient interactions were ordinal data and appropriate for retrospective descriptive analysis using nonparametric testing. The hospice setting included nominal data (home, hospital, nursing or rehabilitation facility, assisted living facility, or hospice specific care facility). The type of setting used a grouping data for parametric testing (ANOVA). The criterion variable in the proposed study was the change in the patients' self-reported level of pain from admission to 96-hours post admission to hospice. The change in the level of pain, based on a numerical pain measurement scale, was interval data and appropriate for retrospective descriptive analysis and parametric testing. Both the predictor variables and the criterion variable were measured through the collection of quantitative data as recorded on the patient's electronic medical record.

Hospice organizations promote comfort as a critical element to enhance the quality of life for hospice patients by integrating policies and procedures that improve self-determination and holistic care. Therapies and interventions reflect evidence-based practice used to enhance the quality of life (Kuehn, 2009). Pain management aimed to increase the patient's comfort level is based on best practice utilizing a three-phase procedure. The hospice IDG group collaborates in the provision of pain management utilizing the three phases that include assessment, interdisciplinary interventions, and evaluation.

The first phase of pain management is the assessment of the patient's subjective expression of the pain experience. Observational analysis of pain through individually reported information provides an optimal foundation to build a treatment plan for a patient (Jamison & Edwards, 2012). A thorough investigation is required to provide enough information to create a plan for pain management. Frampton and Webb (2011) identified primary descriptors of pain through the [gold standard] of self-reporting pain measurement tools. The use of vetted unidimensional scales for the measurement of pain include the verbal rating scale (VRS), Visual analog scales (VAS), and numerical rating scales (NRD) for accuracy in assessment (Caraceni, Cherny, Faisinger, & Kassa, 2002). The proposed study will use a numerical rating scale routinely used by hospice to obtain the levels of self-reported pain upon admission and at 96-hours following admission.

The second phase of pain management requires an interdisciplinary, integrative approach to provide interventions to alleviate the symptoms of pain. According to Tevithich (2008), mind and body systems need a holistic approach and the development of interconnected pain control strategies. An interdisciplinary group approach allows each member to address the patient’s pain from a different perspective with a variety of interventions. The physician, in collaboration with other group members, provides the physiological treatment for pain focusing on medication management for pain and disease symptoms. The nurse, as the advocate for the patient and family, assists the physician in pain and symptom management methods, involves the supportive members of the IDG in the plan of care for the patient and family, and provides physical/psychosocial/emotional and spiritual support to the patient and family. The chaplain and social worker provide expertise in psychological and spiritual support measures. The chaplain provides spiritual care through counseling, preparation for bereavement services, spiritual review/support, and facilitates communication between family members (Kearney, Fischer, & Groninger, 2017; Wittenberg-Lyles, Oliver, Demiris, Baldwin, & Regehr, 2010). The social worker, acting within the interdisciplinary group, addresses the autonomy and holistic needs of the patient/family by providing service referrals/support and bridges the gap between healthcare provider and patient/family communication (Kobayashi & McAllister, 2016). An additional approach to pain management is in providing complementary/integrative therapy interventions for self-determination to meet the values and beliefs of patients (Tevithich, 2008). Utilization of music is often provided as an adjunct therapy to activate cognitive and sensory processes that improve the patient's sense of control to ease suffering (Groen, 2007). The therapeutic modality patient-centered approach offered by music therapy for end of life patients supports the multidisciplinary group approach when cure is no longer possible (Bowers & Wetsel, 2014; Magill, 2001). The study describes the type of IDG intervention, the IDG provider, and the number of interventions provided within the first 96-hours following admission.

The third phase of pain management requires the evaluation of hospice services as a continuous dynamic process that ensures the quality of services provided and supports research-based evidence on which to base practice. Analysis of performance improvement information allows assessment of care to determine if safe practice guidelines are met and provides the basis for education to promote holistic care (Hoffman, 2005). Additionally, information provided from evaluations of bereaved families offers the opportunity to improve hospice services for patients and families

(Rhodes, Mitchell, Miller, Connor, & Teni, 2008). Results of data analysis from the proposed study will play an important role in the evaluation of hospice services.

Research to identify factors related to the IDG pain management approach and the patient’s self-reported pain is needed to promote quality of life for the hospice patient. Research-based practice predicts the success and ability of research to replicate patterns of care while establishing trends for future practice situations (Grossman & Valiga, 2005). The study sought to identify the factors of type and number of IDG interventions that constitute the IDG approach to patient care in the hospice setting. In addition, the study explored the relationship among the factors of type and number of interventions provided by the IDG approach to patient care and the self-reported change in pain level from admission to 96-hours post admission to hospice care.

Background of the Problem

Medicare introduced the Hospice Conditions of Participation (CoPs) on December 16, 1983 to advance the delivery of quality safe care for patients (CMS, 2016). Core hospice requirements, advocated by the Medicare CoPs, includes patient rights, the inclusion of a comprehensive assessment, and care planning supported by a coordinated interdisciplinary group (IDG). The IDG core members: Physician, Nurse, Social Worker, and Chaplain, may also include a variety of additional supportive services. Hospice provides an individualized plan of care to address patient needs through coordination of interdisciplinary care. Interventions provided by an IDG is an integral part of meeting the CoPs Medicare requirements for hospice organizations.

Concept analysis investigating the interdisciplinary approach to health care identified elements of collaboration through a problem-focused process, sharing, and working together toward a common goal through deliberate action (Petri, 2010). Research on the process that occurred during group meetings indicates role ambiguity and gaps in the involvement among members of the IDG (Lysaght Hurley, Barg, Strumpf, & Ersek, 2015; Wittenberg-Lyles, Oliver, Demiris, & Regehr, 2010). Effective communication and collaboration are vital between IDG staff and is a fundamental part of hospice (Oliver, Tatum, Kapp, & Wallace, 2010). Interdisciplinary cooperation during hospice group meetings presents potential communication challenges when creating a cohesive and functional group. A collaborative effort of the IDG has the potential to provide timely interventions to alleviate pain for the newly admitted hospice patient.

Problem Statement

The specific problem is inadequate self-reported pain control in hospice. The National Hospice and Palliative Care Organization (2013) identified that 72% of hospice patients report inadequate pain control within 48-hours of hospice admission. Sutradhar, Atzema, Scow, Earle, Porter, and Barbera (2014) identified that quality of life improves with effective pain and symptom management for cancer patients. A study by Cornell Medical College in 2016 discovered that among the 95% of patients that received pharmacologically based pain treatment, only 42% received therapies that were non-pharmacological in origin (Cea et al., 2016). An additional study by Herr et al. (2010), identified 75% of Hospice patients receiving treatment, experience self-reported uncontrollable pain, and an average of 51% of hospice patients experience poorly managed pain. These statistics indicate that many hospice patients experience pain that is not adequately controlled.

The primary method of pain control continues to be through pharmacological management of symptoms with few studies identifying the rationale for why patients experience the continuation of pain (Carr, 2008). Research results have shown the effectiveness of pharmacological interventions can be improved by the incorporation of additional pain management strategies (Guarneri, Horrican, & Pechura, 2010). In addition, research has shown the importance of utilizing multidisciplinary interventions to meet the patient's need for pain control (Reynolds, Drew, & Denwoody, 2014).

Pain, as a multidimensional experience, affects the cognitive, sensory, physical, social, and spiritual dimensions of a patient's existence (Fink & Gates, 2010). Interventions provided by an interdisciplinary group affect the social, physical, mental, spiritual, and environmental impacts of pain (Horrigan, 2011). The interdisciplinary group approach develops individualized interventions that focus on pain specific to these domains. Spiritual and psychosocial interventions provided by the social worker and chaplain focuses on the existential qualities of human suffering. While the social worker focuses on psycho-social issues related to pain, the chaplain focuses on the suffering and pain due to emotional and spiritual conflict occurring at the end of life through communication and support (Hodgson, Segal, Weidinger, & Linde, 2004). Limiting interventions for pain to a pharmaceutical-based approach may deny the hospice patient holistic care that addresses the cognitive, sensory, physical, social, and spiritual dimensions of pain.

Purpose of the Study

The study purpose was to determine the relationship of factors related to IDG approach to patient care and the change in the patient's self-reported level of pain from admission to 96 hours post-admission to hospice. Specifically, the study explored the factors of type and number of IDG patient interventions offered to hospice patients within 96-hours of admission. Additionally, the study explored the change in self-reported pain levels based on the type of hospice setting (home, hospital, nursing or rehabilitation facility, assisted living facility, or hospice specific care facility).

Population and Sample

The study population consisted of end of life patients within a U.S. not-for-profit hospice located in Palm Beach and Broward Counties in Florida. A sample selection consisted of 134 admitted patients from September 1, 2018 to December 31, 2018. The study focused on a retrospective medical record chart review. The subjects represented a sampling of all patients admitted from within the same geographical area. Study group participants admitted were 21-years of age or older with a prognosticated life expectancy of six month or less. These patients had an admission self-reported pain level four or greater on a scale of zero to 10 (10 being the highest level of pain). The review included retrospective analysis of admissions over approximately a three-month period. The study described the type of IDG intervention, the IDG provider, and the number of interventions provided within the first 96-hours following admission for identified pain of four or greater from admission.

All patients with a pain level of four or higher on admission, as established by the PQRST, were automatically categorized into interdisciplinary hospice groups for rapid IDG approach and identified in the patients' electronic medical record. A pain level of four was selected to correlate with pain management guidelines established by the National Hospice and Palliative Care and supports hospice organization requirements

(NHPCO, 2015). Hospice guidelines identify a pain score of four as a threshold level for moderate pain on the zero to 10 Numeric Pain Scale (figure 1).

Based on data provided by the study hospice organization from 2016, a priori power analysis was conducted using G*Power 3.1.9.2 (Faul, Erdfelder, Lang, & Buchner, 2007). Analysis utilized a medium effect size ($f = 0.30$), an alpha level of 0.05, and a power of 0.80. To find significance for a correlation coefficient, the required sample size is 134. To ensure adequacy of sample size, data collection continued until 140 patient electronic medical records are identified. Of the 10,185 patients admitted to the study hospice organization in 2018, 1,513 self-identified as having pain of four or greater (HCHB®). These data suggested an adequate population was available for completion of convenience sampling.

Significance of the Study

Pain, as a subjective experience, is not only receptive to medication but also to other forms of treatment (Wiech, Ploner, & Tracey, 2008). Patients, whose pain is resistant to pain medications, experience feelings of helplessness and focus on the loss of control by centering their attention on the perception of pain (Wiech, Ploner, & Tracey, 2008). Effective pain management provided by the IDG has the potential to add quality to the final days of patients' lives. The proposed study seeks to reveal identifying factors of the IDG approach to patient care for hospice patients. The proposed study results may offer the potential to provide evidence on which to develop interdisciplinary practice strategies to improve pain management in the hospice setting. In addition, study outcomes may identify areas for further research related to the IDG approach to patient care.

Nature of the Study

Quantitative research can be used to determine the complexity of variables by measuring treatment influences against outcomes (Creswell, 2014). The use of a correlational design can show inferences of associations between two variables without manipulation by the investigator (Carlson & Morrison, 2009). The quantitative approach to research inquiry allows exploration into the relationships or differences between variables for analysis (Creswell, 2014). The proposed study will seek to identify correlations between the hospice patients' self-reported change in pain perception levels from admission to 96-hours post admission and the number and types of patient interactions as a component of the rapid IDG approach to patient care. Additionally, the study will compare the differences in the change in pain levels based on hospice setting.

A quantitative method using a retrospective descriptive correlational design is appropriate for the proposed based on the quantitative nature of the variables. The variable *change in pain level* was the ratio level of measurement, the variable *type of IDG interventions* was a nominal level of measurement and classified according to the discipline (physician, nurse, social worker, chaplain and auxiliary services). The variable *number of IDG interventions* was the interval level measurement and considered to be interactions between IDG members and patients. The variable *hospice setting* was a nominal level of measurement and classified as home, hospital, nursing or rehabilitation facility, assisted living facility, or hospice-specific care facility.

Identification of study participants using a non-random cohort sampling exemplifies a quantitative method study (Creswell, 2014) and supported the practice of providing pain management to all study participants. The quantitative retrospective study utilized documentation in the patient's (EMR) electronic medical record recorded during the first 96-hours of admission to hospice. Data collection continued over a three-month timeframe or until an adequate sample size was met. The data collected from the patient's medical record provided the number and type of IDG interventions and the patient self-reported pain level. The levels of self-reported pain ranging from 0 to 10 are routinely charted in the patient's electronic medical record. Identification of criteria for participation in the study was the self-reported pain level of four or greater upon admission to hospice. Historical data collected by the researcher was substantiated and therefore unable to be manipulated to skew information from the participants (Salkind, 2010). The study included hospice patients with a variety of characteristics including diagnosis, age, and gender that represented the population of hospice patients.

Identification of the most appropriate method of research reflects the philosophies, logic, structures, strategies, and general rules that apply to new research strategies (Gray, Grove, & Sutherland, 2017). Research analysis of available methods identifies qualitative or quantitative, or mixed methods possibilities for the proposed study. The phenomenological aspect of qualitative studies requires analysis of descriptive lived experiences through researcher interpretation; whereas, quantitative research involves analysis based on logic, objectivity, and utilizes structure measurement scales allowing for generalizations of findings (Gray, Grove, & Sutherland, 2017). Mixed methods research combines quantitative and qualitative methods to include the personal, interpersonal, and social context experiences of the researcher (Clark & Ivankova, 2016). The nature of the study required an understanding of dependence or association through the objective statistical analysis of measured numbers to identify linear relationships between two variables which is consistent with the quantitative research method. Due to the numerical data of the study, pain was demonstrated by level and the number and type of components of the rapid IDG approach to patient care; therefore, a quantitative research method was most appropriate.

Consideration for using a retrospective chart review to obtain archival data of pain-perception relief interventions for hospice patients was mandated to maintain ethical research for this vulnerable population. A chart review method offered the probability of eliminating the unethical practice by avoiding direct patient contact, manipulation of the intervention, and unprincipled comfort measures. Outdated data does not provide a current picture of organizational accuracy and did not offer the reliable information that was significant, and valid for decision-makers. A current analysis of medical records within the past year provided consistent data for organizational relevancy. Research on potential modes of support for quantitative investigation included a search of terms related to palliative care, hospice, interdisciplinary, pain intervention or management. The logic of using a quantitative method provides for rigorous attention to precision and deductive inference that establishes a relationship between the premise and conclusion (Mitchell, 2018). The quantitative measurement of outcomes required the statistical analysis of numerical data collected from the patient's medical record to establish the number and type of patient care contacts provided as components of the rapid IDG approach to patient care, and the relationship of this approach to the change in pain perception as expressed by hospice patients.

Based on cohort sampling, measuring the relationships between independent and dependent variables improved accuracy when applied to non-randomized studies-based random sampling. Non-experimental examination of relationships between variables offers the ability to answer questions and hypotheses through a quantitative method (Creswell, 2014). Application of an actual experimental study would have a negative influence on a vulnerable population such as hospice patients. Exclusion of qualitative research was due to the aspect of individual interpretation and subjectivity that occurs through communication and observation.

Research Questions and Hypotheses

The following research questions and hypothesis guided the proposed quantitative correlational research study:

RQ1: Do the type and number of IDG patient care interventions predict the change in self-reported pain levels within 96-hours of admission to hospice?

H01: The type and number of IDG patient care interventions do not predict the change in self-reported pain levels within 96-hours of admission to hospice?

HA1: The type and number of IDG patient care interventions do predict the change in self-reported pain levels within 96-hours of admission to hospice?

In addition, the following sub research question and hypothesis will be addressed in the study:

RQ2: Is there a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

H02: There is no difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

HA2: There is a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

Theoretical Framework

Identification of a theoretical framework that supports the method will require an in-depth investigation of possible applications to hospice practice. The Theory of Goal Attainment (TGA) established by Imogene King relates various assumptions between caregiver and patient that encourage bilateral agreement in creating a purpose for the client (King, 1981). This theoretical framework will offer potential support for the study relating to a metaparadigm approach to pain management for hospice patients. The Theory of Goal Attainment creates a framework to observe and measure information about the environment, situation, and the client that will ultimately assist in establishing agreed upon goals of care (King, 1981). An integrative systems approach to treating pain on multiple levels (personal, interpersonal, and social) will demonstrate an interactive team focus on goal attainment. The philosophical underpinnings of the Theory of Goal Attainment (TGA) emphasize the differences and similarities between nurses and other professionals in the process of assisting individuals or groups to attain their goal (King, 2007). The TGA will emphasize the patient’s involvement in their individualized healthcare decision-making process supporting self-determination for pain management care.

King's integrative systems approach toward social, interpersonal, and personal pain concepts will provide critical relationships between the Goal Attainment Theory and the study of IDG patient care interventions to manage pain in the hospice setting. King's interacting systems relate to the different disciplines represented by members of the IDG that collaborate to set goals, provide interventions and measure outcomes. King’s Theory of Goal Attainment provides philosophical concepts relating to perception, communication, interaction, and transaction between caregiver and patient which are action-oriented, purposeful, and reactive (King, 1981, 1999). The integrative systems approach will respect the individual choices in decision-making which would support the proposed study on interventions for pain.

The Theory of Goal Attainment (TGA) as a middle range theory will offer support for the IDG approach to pain management and the patient's goal of pain management by supporting a collaborative focus on goal attainment. The conceptual desire and philosophical framework of causality and probability demonstrated through the TGA to promote attainable goals will focus on positive outcomes in pain management. Application of the TGA will exemplify the quality of care and build the foundation of further research that will support practice guidelines. Action goals require transactional processes that include the implementation of nursing practice methodology driven by autonomy and self-determination (King, 2007). The philosophy of self-determination in end of life decision-making processes will be compatible with hospice mandates and IDG interventions to manage pain based on patient preference.

Theory of Goal Attainment Related to this Study

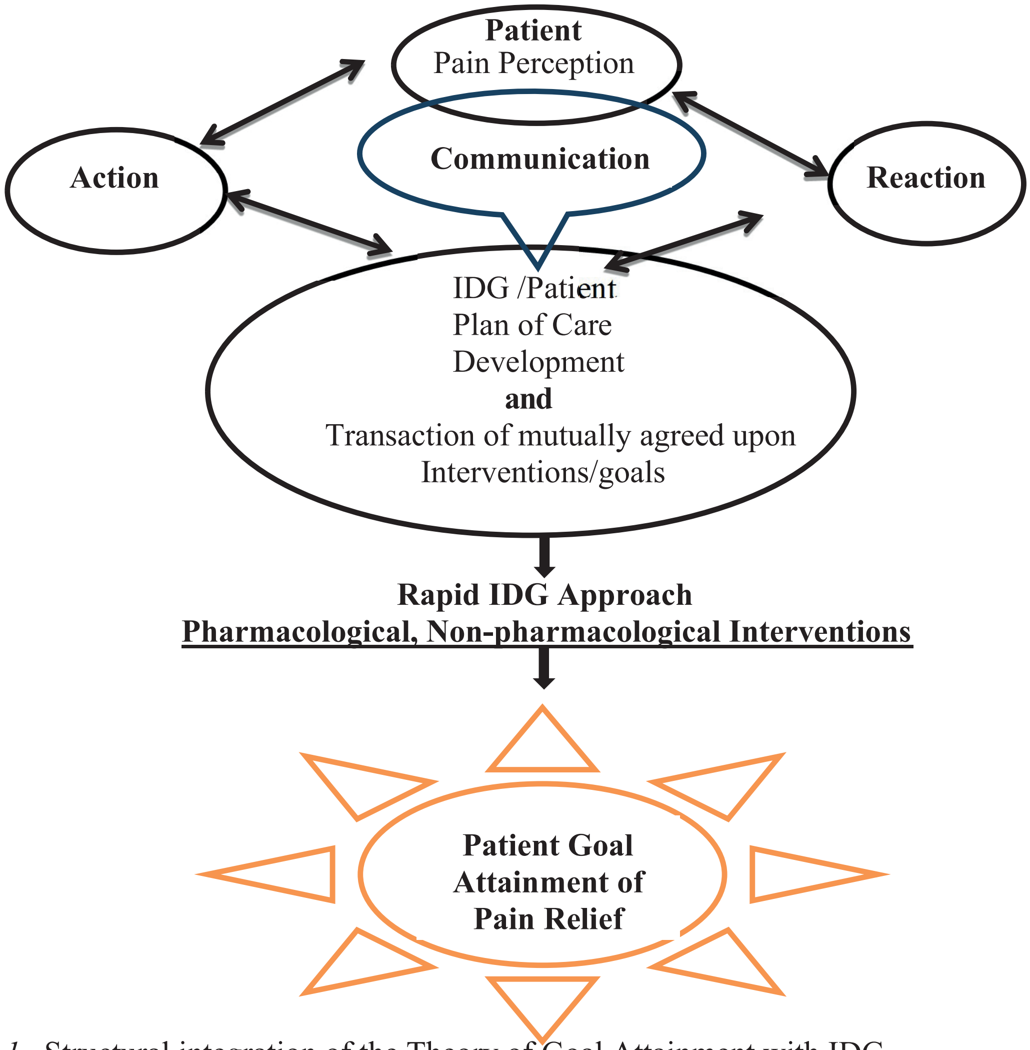

Figure 1. Structural integration of the Theory of Goal Attainment with IDG interventions and goals for pain adapted from King's conceptual system of communication and transactions. Adapted from "King's Conceptual Model, Theory of Goal Attainment, and Transaction Process in the 21st Century" by I. King, 2007, *Nursing Science Quarterly, 20:2*, p.110. Permission obtained.

The Theory of Goal Attainment theoretical framework supports the interventional components of functional status and its social domains (Caceres, 2015). The fundamental concept of the Theory of Goal Attainment includes a systematic framework that focuses on individual, interpersonal, and social needs to achieve a shared objective (Frey, Sieloff, & Norris, 2002). Khowaja (2006) utilized King's framework with a multidisciplinary approach in a clinical setting to establish quality decision-making. Areas of application for goal attainment include advocacy, case management, and managed care (Frey, Sieloff, & Norris, 2002). The Theory of Goal Attainment provides support for the development of an effective plan of care and improves communication, interaction, and consistency to share information between nurses and other disciplines (Messmer, 2015).

Definition of Terms

The following terms were used in the study to determine the relationship of factors related to the IDG approach to patient care and the change in the patient's self-reported level of pain from admission to 96-hours post admission to hospice.

Interdisciplinary Groups (IDG). The interdisciplinary group integrates multi-disciplinary approaches into *a single holistic approach* to treatment from their independent viewpoint (Jessup, 2007). IDGs are designed to concentrate on the multidimensional aspects of pain through interventions provided by group members including the physician, nurse, social worker, and chaplain (Dugan Day, 2012). In the proposed study the IDG will be inclusive of the physician, nurse, social worker, chaplain, and ancillary therapists.

IDG patient care interventions to manage pain. IDG interventions are patient interactions focused on palliative services for the patient/family at end of life (NHPCO, 2018). In the study the IDG interventions included patient interactions with the physician, social worker, chaplain, nurse and ancillary therapists designed to promote pain management for the end of life patient.

Hospice Care Setting. Hospice care is specialized, compassionate, holistic care provided to terminally ill patients that maximizes the quality of life (Crusse & Messler, 2014) that is provided in a variety of settings. In the proposed study, the hospice care setting will include home, hospital, nursing or rehabilitation facility, assisted living facility, or hospice-specific care facility.

Self-reported Pain. Pain as an individualized unpleasant sensory and emotional experience relates to interpreted actual or imagined damage to tissues (IASP, 2014). The experience of pain for the terminally ill is complex with multiple elements of physical, spiritual, psychological, and social anguish (Ferrell, Coyle, & Paice, 2015). In the proposed study, pain level will be what the patient expresses verbally as a numerical value between zero and 10.

Assumptions, Limitations, and Delineations

Assumptions

Several assumptions guided this quantitative, retrospective correlational study to explore the relationship among the type of IDG patient care interventions to manage pain, the number of IDG patient care interventions to manage pain and the change in self-reported pain level within 96-hours of admission to hospice. For accuracy and validation, it was essential to capture all IDG patient care interventions from admission to 96-hours post-admission. One assumption of the study was that IDG members will document patient interactions provided within the first 96-hours following admission to hospice in the electronic medical record. It is further assumed that the verbal hospice patient self-report pain relief levels were assessed and recorded on a nominal scale of zero to 10. The third assumption was that the nurse had accurately documented the patient's self-reported pain level. It is also assumed that utilizing the quantitative data from the patients' electronic medical record as empirical measures allowed inferences to be made identifying relationships among the variables of interest.

The scope of the study was limited to IDG interventions to manage pain that are provided to patients within 96-hours of admission to hospice care. The 96-hour window of data collection was based on the need for rapid pain relief and the relative short duration of hospice stay. Additionally, the study was limited to patients admitted to hospice with an identified pain level of four or higher on a pain scale of zero to 10 and who were alert and could verbalize their level of pain. Inclusion criteria restricted the study population to adults over the age of 21 who meet the hospice criteria for admission. IDG members included in the study were the physician, nurse, social worker, chaplain and ancillary therapist. The hospice environment consists of residences where the patient received hospice services such as hospital-based hospice specific nursing units, residential homes, nursing homes, and assisted living facilities. The subjects represented a sampling of all patients admitted from within the same geographical area. Electronic medical records of patients were selected from all electronic medical records of patients who received hospice services for 96-hours or more. Only data related to the first 96-hours of admission was collected for the study.

Limitations

The most significant limitation of the study was the inability to randomize subjects into treatment groups leading to potential bias between groups. Because this study was retrospective, patient characteristics and other factors could have influenced study findings. The population receiving hospice care were at higher risk for attrition than other populations, which limited the number of patients available for data collection. This caused the reduction in the total population available for analysis. Furthermore, the enrollment of study participants in a single hospice organization with specific patient care protocols meant results were not necessarily generalize to other hospice organizations. The timeline for retrospective data collection limited the variety of data available for statistical analysis.

Delimitations

Delimitations relate to narrowing the scope of practice (Creswell, 2014). This study confined the data collection to electronic medical record documentation of IDG interventions and patients' self-reported pain level. The research focused on patients admitted to a not-for-profit organization that provided hospice care in a variety of settings. The patient population was limited to hospice patients cared for with a prognosticated life expectancy of six months or less. Due to the basic expectations of the provision of pharmacological based interventions to manage pain for all patients with a pain measurement of four or more, it was anticipated that the study would demonstrate the combined relationship of pharmacological and non-pharmacological interventions on the patients' self-reported pain level.

Chapter Summary

The proposed study explored the relationship among the type of IDG patient care interventions to manage pain, the number of IDG patient care interventions to manage pain and the change in self-reported pain level within 96-hours of admission to hospice.

Chapter 1 summarizes relevant background information and details the significance of the study relating to IDG assessment and pain management interventions for hospice patients. Chapter 1 also presents primary and sub-research questions and hypotheses. Additionally, the research methods, including the intended data collection and analysis, are described. Finally, Chapter 1 provides the operational definitions for the study, theoretical framework, along with assumptions, scope, limitations, and delimitations for the proposed study.

Chapter two provides an examination of previous research relating to rapid IDG approach contact for pain perception in end of life patients. Research related to King's Theory of Goal Attainment is presented to provide a foundation for the study of patient-centered goals for pain management in hospice. The historical review will support an interdisciplinary group approach to treating pain through the accuracy of assessment, measurement, and management modalities. The literature review presents supportive research information to support the proposed study related to IDG pain management interventions.

Chapter 2

Literature Review

The goal of the proposed study was to identify the factors of the IDG approach to patient care by number and type of pain management interventions and to explore the relationship between these factors and the change in pain level of hospice patients during their first 96-hours in hospice care. Additionally, the study sought to determine the difference in the type and number of IDG pain management interventions based on the hospice setting. The types of pain management interventions were discipline-specific and included active listening techniques, psychosocial, and financial assistance, culturally sensitive pastoral aid, therapeutic touch, sound to promote comfort, exercises through an active or passive range of motion, therapeutic touch, massage, and distraction techniques as well as pharmacological interventions.

Pain is universally recognized as a multidimensional and personal experience, encompasses sensory, cognitive, behavioral, and physical dimensions (Wilkie & Ezenwa, 2012). The integration of interdisciplinary group interaction contacts for pain management practice is challenging due to the difficulty in translating research into practice. This challenge produces a barrier to patients' access to holistic pain management (Glowacki, 2015). Additional disparities in treating pain result from health professionals who deny the pain experienced at the end of life by patients as a complex and debilitating patient perception. These barriers to the optimum hospice philosophy of equal access to quality pain management result in poor outcomes and dissatisfaction with care (Glowacki, 2015). The unrealistic expectation that pain is an anticipated result of chronic disease and biologic decline treated with pharmacological analgesics should not prevent holistic and aggressive treatment to manage pain symptoms. A barrier to adequate treatment of pain includes the inappropriate management of pain assessment tools that underrate the level of pain experienced by patients (Tate & Chibnall, 2014; Zwakhalen, Hamers, Aby-Saad, & Berger, 2006). A study by Tate, Chibnall, Miller, and Werner (2011) conversely found that within different physician specialties such as a retrospective cohort comparison between neurosurgeons and internists, the experience of back pain reported using grading by levels by patients was discounted. Pain unresolved after three months is considered chronic. Chronic pain is primarily treated with opioid and non-opioid analgesics (Labianca et al., 2012). Failure to receive adequate treatment is a substantial concern for individuals who experience daily pain (Kaye et al., 2014). Comprehensive therapeutic pharmacological and non-pharmacological interventions will require a group approach to successful implementation of holistic treatment for pain.

The multi-dimensional effect of pain requires a diverse, multidisciplinary approach to be effective. One solution is to implement a holistically based interdisciplinary approach to pain management within a rapid response mode for patients. A patient-focused approach to identify and treat the global effects of pain will require individualized interdisciplinary support. A multimodal approach in the treatment of pain and pain symptoms should be initiated as soon as possible and include interdisciplinary interventions, pharmacological, and complementary techniques (Dobbs, Baker, Carrion, Vongxaiburana, & Hyer, 2014). It is therefore important to provide IDG interventions to manage pain in a timely manner to support the patient pain relief needs.

Chapter two presents an overview of current and historical literature relating to the proposal research topic, IDG interventions to manage pain in the hospice setting.

Exploration of the number and type of patient interactions is required to establish the relationship between IDG pain management interventions and the associated pain level of patients during their first 96-hours in hospice care. The literature search will include current research findings related to the independent variable, IDG pain management interventions, and dependent variable, change in pain level, and to identify gaps in the literature. The literature review will consist of both quantitative and qualitative research studies to support the collection and analysis of evidence. Exploration of research methodology on the research study will identify the effect of pertinent findings for analysis.

Title Searches and Documentation

Databases used in the current literature review included the: Education Resources Information Center (ERIC), EBSCO host, the Cumulative Index to Nursing and Allied Health (CINAHL), Medline Plus, Google Scholar, Wiley Online Library, Sage Journals, and ProQuest searches. Other sources included in the review were internet websites focused on hospice-specific information such as the National Hospice and Palliative Care Organization (NHPCO) and the Hospice and Palliative Nursing Association (HPNA). Scholarly pain dedicated web sources included the International Association for the Study of Pain, National Center for Complementary and Integrative Health (NCCIH), American Academy of Pain Medicine, and the American Pain Society Medicare (2017). Supportive literature review resources studied included the Institute of Medicine (IOM), National Institute of Health (NIH), American Cancer Society, National Institute of Neurological Disorders and Stroke, Science Direct, and the World Health Organization (WHO).

Materials reviewed included research studies, books, meta-analyses, meta-synthesis, and dissertations, and search engine/websites such as Google Scholar, and medline.com. The result of the extensive search of the literature provided a substantial amount of relevant information for application to the study. A focus on the interdisciplinary approach to pain management was the primary aim of the literature review to assist in exploring the strategies for pain management for patients at the end of life. Emphasis was also identified using studies that utilized multiple measures of variables relating to pain management. The historical literature review included material published between 2000 and 2012 related to pain, pain management, and interdisciplinary groups/teams. Current literature resources focused on research conducted between 2013 and 2019. Additional keywords of pain measurement and end of life, pain measurements, pain interventions, end of life and pain, hospice, complementary/ integrative therapy and pain, and palliative interventions, and pharmacological interventions for pain were used to narrow the focus of the literature review.

Analysis of current research studies provided the most appropriate method to identify supporting research for the proposed study. A sparsity of research exists related to the IDG approach to patient care and the effect of IDG interventions on patient pain in the hospice setting. Exploration of research methods used in research related to the topic revealed an absence of qualitative research, specifically ethnography, which represented an immersion in IDG to understand goals and motivation, or phenomenological studies utilizing interviews or observations. One form of qualitative research used to explore the proposal topic was the case study design. These case studies were primarily medically based but did not explore the IDG approach to pain management. A review of the research related to the proposal topic indicated that researchers primarily used quantitative, retrospective cohort, descriptive, and comparative research methods. These research methods and designs provided a large sample while protecting vulnerable populations. The literature review supports the quantitative retrospective correlational design to obtain a large sample size while protecting vulnerable populations.

Historical Content

Peona, the root word for pain, is Latin for punishment, and cannot be measured objectively (Zerwekh, 2006). The human experience of pain is a personal experience. Pain has plagued humanity since ancient times and is a complicated integral part of life (Sabatowski, Schafer, Kasper, Brunsch, & Radbruch, 2004). Judeo-Christian culture identifies pain as a test of faith (Meldrun, 2003). Recognition and treatment of pain in ancient Greece and the Middle Ages in Europe was based on Galen (129-200 A.D.) principles and utilized opium-based salves (Harrison, Hansen, & Bartels, 2012). Aristoteles (384-322) regarded pain as universal and a peculiarity to human nature causing a lack of harmony. Hegel (1770-1831) proposed pain as a privilege that only humans feel as antagonistic between spirit and life (Santoro, Bellinghieri, & Savica, 2011).

Gilson, Ryan, Joranson, and Dahl, (2004) found that at least 95% of patients who experience cancer pain are undertreated in the world. Investigation of why pain is undertreated indicates that additional research evidence in the literature is needed. A literature review by Deepak, Rastogi, and Ahuja (2011) identified a lack of resources, unavailability of morphine, physician phobias, lack of communication, and the complexity of pain for cancer patients as barriers.

Pain Management

An important element to the experience of a good death is to have relief of symptoms such as pain (Heyland et al., 2017). During the 19th century, cultural norms for discipline-specific treatment of symptoms relating to pain influenced by the introduction of opiates to relieve pain changing societal experiences (Gordon et al., 2014). As the 20th century approached, misuse of opioids caused medical professional's support for the Harrison Narcotic Control Act of 1914 which resulted in the progressive control of narcotics (Gordon et al., 2013; Meldrun, 2003).

Interventions for pain include pharmacological and non-pharmacological interventions at end of life. Pharmacological therapies are regulated under the guidance of a skilled medical professional to intersect with the individualized wishes of the patient. Relief of pain has generated a multitude of non-pharmacological interventions throughout history from the mystical/spiritual to the use of medications. Therapeutic strategies based on religious beliefs, ceremonies, and experiences were used to alleviate pain in ancient societies such as Egypt and Peru (Sabatowski et al., 2004).

Treatment of pain historically is provided through the medical model of the western hemisphere which primarily utilizes pharmaceuticals (Gordon, & Dahl, 2003). Application of animal products, bodily fluids, holy oils, and plants fueled the belief that interventions were beneficial in relieving pain for ancient cultures (Bonica, 1991). The Greeks, Romans, and ancient Egyptians treated pain by using an electric fish to provide shock treatment to combat the effects of arthritic pain (el-Ansary, 1989). Nonsteroidal compounds such as aspirin have been used by societies to treat pain for thousands of years (Vane & Botting, 1998). In the mid-1990s, anticonvulsant medications were used to treat trigeminal neuralgia and gabapentin was used for neuropathic pain symptoms (Blom, 1962; Mellick & Melick, 1995).

The use of opium can be traced to ancient times in China, Greece, Rome, Europe, and South America with evidence of the Neolithic use of poppies for the religious and medical treatment of pain (Wright, 2008). Ancient Egypt cultivated the poppy flower for its euphoric and analgesic properties (Buckland, & Panagiotakopulu, 2001). The analgesic properties of opium to create morphine were isolated by Wilhelm Seturner in 1805 while developing improvements in treating pain and other ailments (Sabatowski et al., 2004).

Continuation in the expansion of new drugs created possibilities for the management of primary uncontrolled pain. By the 1900's, morphine became the drug of choice as a panacea for terminal cancer patient pain in hospitals with the formulation of the Brompton Cocktail (Clark & Graham, 2008). The cocktail, consisting of a mixture of morphine, codeine, tincture of cannabis, gin, syrup, and chloroform water, assisted practitioners to provide advanced pain relief comfort for patients. Dame Cicely Saunders, the founder of the modern hospice, was one of the first to utilize the Brompton Cocktail for end of life patients (Clark & Graham, 2008).

The World Health Organization (WHO) (1986) introduced recommendations for identifying carcinoma pain control through a mild, moderate, or severe ladder approach to simplify and clarify treatment options. The complexity of total pain related to cancer affects many aspects of a patient's quality of life (World Health Organization, 1986). Drug therapy such as opioids and other analgesics are the primary treatment for cancer pain; however, the WHO (1986) encourages consideration of the benefit offered by alternative methods of treatments. The second step analgesics which contain NSAIDs or Acetaminophen have potential side effects and provide a low power analgesic affect for patients who experience severe pain (Tassinari et al., 2011). A meta-analysis by Eisenberg, Marinangeli, Birhahm, Paladin, and Varrassi (2005) found that the efficacy of NSAIDS offered no significant improvement in pain control for moderate pain and increases the risk of adverse side effects. Despite the concern of combination narcotic and NSAIDS as part of the WHO ladder for pain management, the ladder remains a powerful and generalized tool for pain management (Vargas-Schaffer, 2010).

Furlan, Sandoval, Malis-Gagnon, and Tunks (2006) conducted a meta-analysis related to the use of opioids for chronic pain as a long-term disorder experience. The review verifies opioids are powerful for reducing pain and improving function for the patient for non-cancer related pain. Opioid use for treatment of cancer pain has been found to offer significant pain relief for cancer patients experiencing moderate to severe pain. Historically, concepts in chronic pain management include research into the effectiveness of antidepressants, anticonvulsants, opioids, and topical agents in the treatment of neuropathic pain. Choudhury (2008) incorporated neuropathic pain management techniques toward aggressive pain control such as nerve blocks, spinal cord stimulation, radio frequencies, gene therapy and intrathecal pumps.

Pain assessment requires the use of assessment tools that are valid and reliable in providing standardized results. Assessing pain relief comfort levels throughout the review of interdisciplinary pain management studies indicates a variety of assessment tools have been used. The Multidimensional Pain Inventory (MPI), Pain Catastrophizing Scale (PCS), and a self-reported pain numeric scale were used in research on chronic non-cancer pain interdisciplinary management study by Darchuk, Townsend, Rome, Bruce, and Hooten (2010). Pain intensity scales were used in a controlled before and after design on interdisciplinary pain in long-term care by Kaasalainen et al. (2012). Methods for pain assessment include numeric rating scales (NRS) from mild to severe pain (Reich et al., 2013, & Martin et al., 2013). Behavioral analysis tools used for non-verbal patients included the Pain Assessment in Advanced Dementia Scale (PAINAD), Pain Assessment Scale for Seniors with Dementia Scale (PACSLAC), The Pain Assessment in Non-Communicative Elderly Persons (PAINE), and the Checklist for Nonverbal Pain Indicators (CNPI). The CNPI is used to identify acute and chronic pain indicators in the hospital and long-term care areas of practice (Herr, Coyne, McCaffery, Manworren, & Merkel, 2011). Graven et al. (2011), utilized scales such as the Visual Analogue Pain Scale (VAS) to assist with patients who had difficulty with communication.

The availability of assessment tools for pain has not resulted in adequate assessment of pain. Steindal, Brendal, Wergeland, Sorbyem, and Lerdal (2011), found that pain in hospitalized dying patients was poorly assessed and documented for intensity resulting in lack of treatment. The retrospective cross-sectional correlating study assessed 220 cancer patients in the last days of life. In the last three days of life, 8.8% did not receive pain medication with 42% of patients experiencing pain in the last days of life (Steindal, Brendal, Wergeland, Sorbyem, & Lerdal, 2011).

Hospice

During medieval times, travelers sought places of a shelter where some pilgrims ended their journey with death (Flood, 1984). These places of safety became the refuge for the poor and disadvantaged and provided health care for those in need. As anticipated in life, death was an accepted part of being human. With the expansion of medical and scientific advances, patients began to seek a cure within institutional settings. A change in the philosophy toward death promoted a temporary extension of human life through artificial means (Flood, 1984) while recognizing a need for end of life care once medical science could no longer prolong life.

Moving from small volunteer hospice organizations to care for the more significant demand for hospice services required the development of structured management care. Modern hospice care originated with the 1967 founding of St. Christopher's Hospice for the dying patient by Dame Cicely Saunders in England. It wasn't until 1974 that the first hospice, the Connecticut Hospice, was created in the United States by Florence Wald (NHPCO, 2015).

A primary reason for the admission to hospice services is to provide expert pain and symptom management for end of life patients (Oliver et al., 2007). An increased number of terminally ill patients preferred a non-hospital environment and chose to remain in their home environment through to end of life to receive the interventions necessary to maintain comfort (Flood, 1984). In order to provide expert care in the management of pain and symptoms, the hospice organizations needed to maintain financial solvency and expand services through supportive individuals and agencies. The Hospice Medicare Benefit program of 1982 allowed hospices to expand care from voluntary to paid care providers for the dying (Connor, 2007). Medicare in 2014 covered 85.5% reimbursement costs for all hospice patients while supporting the care for over 1.6 to 1.7 million individuals at the end of life (NHPCO, 2015).

Interdisciplinary Group Therapy

The gate control theory of pain developed by Melzack and Wall (1965) expanded modalities applied in the treatment of pain, which advanced to include psychosocial and physical therapy interventions within a biopsychosocial model of pain (Siegele, 1974). Identifying the best approach to treat patients with pain remains within a primary care medical model setting. In 1977, patients experiencing pain were found to benefit from a centralized care model of multiple care specialties developed within a multidisciplinary pain clinic (Bonica, 1977).

The holistic nature of hospice services requires a comprehensive and palliative approach to care of those with an end of life prognosis of six months or less. Medicare mandated the integration of the IDG into patient care management through the application of Hospice Conditions of Participation (CoPs) in 1983 (CMS, 2016). Collaboration among the core group members (physician, nurse, social worker, and chaplain) along with supportive ancillary personnel provide patient-centered care through teamwork (Kobayashi & McAllister, 2016).

The National Hospice Consensus Project (NHC) established by the NHPCO and HPNA associations introduced guidelines for hospice organizations to implement into practice (National Consensus Project, 2004). The goal of the NHC was to promote excellence in IDG interventions by standardizing palliative care questions for patients and families experiencing life-limiting illnesses. The NHC (2004) addressed the management of pain, psychosocial distress, and spiritual needs through coordination of care (NHC, 2004).

Research by Brumley, Enguidanos, and Jamison (2007) indicated the interdisciplinary group approach to care can result in less time spent in a hospital utilizing more frequent home visits which improve satisfaction with overall interventions and care. The comparative two-year study of 558 participants included a control group of non-palliative care and an experimental group of palliative care patients receiving interdisciplinary interventions for reducing pain and symptoms and improving quality of life. Satisfaction with care for pain and symptoms is found to increase with interventions provided by the IDG. The study showed 90% of participants were more likely to receive palliative care for pain and symptom management in the home environment. A limitation of the study included the lack of self-reported pain measurements before and after interdisciplinary interventions.

With the preference of patients to die at home being a predominant factor for care (Gomes & Higginson, 2007), an IDG approach offers continuity in care. Gade et al. (2008) found that improved quality of life and continuity of care are higher for patients receiving care by interdisciplinary care groups. Patients require additional services toward the end of life and benefit from a holistic, interdisciplinary approach to pain management.

Cohort comparison studies used for analysis of pain and the application of interdisciplinary patient interventions support the interdisciplinary holistic management of pain. Graven et al. (2011) investigated interdisciplinary impact on neuropathic pain within a pain clinic setting. Evaluations and treatment of patients with neuropathic pain were investigated to establish pain severity. The randomized clinical trial showed that with the integration of interdisciplinary treatments there was an improvement in self-reported pain level and physical functioning as compared to the pharmacological treatment only control group. Interdisciplinary interventions were found to improve patient pain outcomes due to the collaborative multidisciplinary interventions focused on attainment of patient-specific goals.

Therapeutic practices for the management of pain include an interdisciplinary approach as a gold standard (Dershnee, 2014). Stanos (2012) completed a focus review of a small sample of four major pain rehabilitation programs (Brooks Rehabilitation Pain Rehabilitation Program, Cleveland Clinic, Mayo Clinic pain Rehabilitation Center, and Rehabilitation Institute of Chicago Center for Pain Management) that provide an interdisciplinary approach to treating pain under a biopsychosocial model of care and found beneficial measurement outcomes. A comparison of programs identified shared commonalities of utilizing an interdisciplinary group of physician, nurse, psychologist and multiple therapy experts to treat pain with mind-body techniques, relaxation techniques and self-management of pain (Stanos, 2012). Significant improvements in pain improvement were established by using an interdisciplinary approach to pain management for any patient experiencing uncontrolled pain. Available statistical analysis on pain improvements identified that the Mayo Clinic found improvements ($P < 0.001$) in pain severity and function maintained for six months (Stanos, 2012).

A cohort comparison study by Rogerson, Getshel, and Bierner (2009) showed significant pain intensity improvement for patients who received interdisciplinary care for acute low-back pain. The study focused on comparing an interdisciplinary treatment group with a standard medical treatment group for pain outcomes at intervals of three months over a 12-month duration to post treatment. Measures for pain included the patients self-reported pain severity. The interdisciplinary group included treatment interventions of cognitive-behavioral (coping skills, training, relaxation, and biofeedback), and physical therapy while the standard medical treatment included medications for pain management only. Questionnaires provided data for analysis of the two groups finding at 12-months there was a "more rapid improvement over time" in pain relief response ($P<0.001$) for the interdisciplinary group. The study failed to specify the tool used for collection of pain intensity hindering replication.

Measurement of interdisciplinary physical therapy, counseling, and the noninvasive non-pharmacological interventions indicated the impact interventions had on generalized patients with neuromuscular and neuropathic pain (Graven et al., 2011). Graven et al (2011), researched interdisciplinary collaboration by observing the physician, nurse, social worker, and kinesiologist interventions. The interventions provided by the physician included evaluation and management of the pain pharmacologically. The nurse's role in the study was to assess and evaluate response to treatments. The social worker educated the patient on physical coping skill and psychosocial issues, and the kinesiologist assessed the physical capabilities of the patient (Graven et al, 2011).

Complementary/Integrative Therapy

Acupuncture, acupressure, and massage therapy was utilized by the Chinese approximately 2,600 B.C. (Sabatowski et al., 2004). In ancient Greece and the Roman Empire, medicinal herbs were used to treat illness and heal (Chiappelli, Prolo, & Cajulus, 2005). As early as 5,000 BC, the traditional Chinese and Sumerian cultures recognized the mind-body connection for healing that emphasized the power of thoughts and emotions (Chiappelli, Prolo, & Cajulus, 2005). In Egypt, the therapeutic treatment of pain and symptoms of anxiety, and dyspnea related to pain through the application of music has been corroborated through historical records dating to 1500 BC (O'Kelly, 2002). Florence Nightingale used music to soothe and heal soldiers during the 1854 Crimean War (Cardozo, 2004).

The cause and effect of pain requires different treatment plans to address the human complexity of mind, body, and spirit in pain perception to manage pain (Oliver et al. 2007). Integrative therapy practices used for pain treatment have paralleled the development of medications. Nursing research in the 1970s and 1980s identified complementary/integrative therapy as a valuable enhancement for treating pain, anxiety, and depression by examining the mind-body connection through treatments such as guided imagery (De Paolis, 2018), breathing and relaxation techniques, music, hypnosis, prayer and artwork (Koithan, 2009). As of 2002, music therapy was offered for patients in pain or experiencing uncontrolled symptoms in over 30 countries (Hogan, 2003).

Application of noninvasive wellness care unrelated to pharmacological agents requires the inclusion of alternative strategies in providing holistic options for interventions (Herr et al., 2010). Herr et al. (2010), used an experimental study that was randomized and controlled to observe the pain assessment and management for 399 older patients at end of life. The study found that only 22.5% of patients had non-pharmacological therapy such as cognitive-behavioral therapy, massage, repositioning, music, meditation, relaxation, or the application of heat or cold use (Herr et al., 2010) provided for pain management on hospice. Even with the best of complementary or integrative interventions, the pain experience can be as high as 75% for patients. Complementary/integrative therapies may enhance the standards of management of care.

When pain affects the physical, emotional, spiritual, and psychosocial aspects of a patient's life (Herr et al., 2010; Parmelee, 2005; Walsh, Donnelly, & Rybicki, 2000), including interventions for the mind-body connection can generate feelings of hopelessness and helplessness that exaggerate the pain score severity and interpretation of pain (McCaffrey, Frock, & Garguilo, 2004).

In 2002, The White House Commission on Complementary and Alternative Medicine Policy (WHCCAMP) was established to maximize the potential benefit of non-pharmacological therapies for consumers (Kreitzer, Mann, & Lumpkin, 2008). The use of mind-body interventions provided by interdisciplinary increased due to patient-driven demands (Kreitzer, Mann, & Lumpkin, 2008). Biofield therapies offer energy healing which include healing touch, polarity therapy, qigong, reiki, and therapeutic touch (Anderson & Taylor, 2012). Biofield therapy, as a complementary or integrative intervention for pain, addresses the mind-body connection through holistic techniques such as therapeutic touch. Anderson and Taylor (2012) conducted a literature review analysis of studies in biotherapy and found the effects of biofield treatments decreased pain perception and reduced anxiety in cancer patients. Research found a correlation between positive effects of healing touch on pain perception (Abhabati et al., 2010; Danhauer et al., 2008; Olson, Hanson, & Michaud, 2003; Post-White et al., 2003). Limitations identified from review of these bio-field studies indicates a potential lack of training and knowledge for application of touch therapies. Biofield therapy purportedly penetrates the energy fields of the body to improve healing capabilities (Monroe, 2009). Therapeutic touch as a biofield noninvasive healing modality significantly reduces perceptions of anxiety and pain in patients with osteoarthritis (Gordon et al., 1998; Lu et al., 2013), and musculoskeletal pain (Denison, 2004; Lin, 1998), or burns (Turner, Clark, Gauthier, & Williams, 1998). Therapeutic touch intervention decreased pain and fatigue within five days of treatment for patients undergoing chemotherapy (Aghabati, Mohammadi, & Esmaiel, 2010; Jackson et al., 2008; O'Mathuna, 2011). Nursing personnel apply therapeutic and healing touch as a process to facilitate perception of wellbeing (Monroe, 2009).

Management of individualized pain is complex requiring exploration of the utilization of diverse approaches including treatment options in providing optimal pain relief comfort. A holistic interdisciplinary perspective on pain inclusive of involving the social worker and suffering identifies the need for pain relief in older EOL patients (Morrissey, 2011). A study by Oliver, Wittenberg-Lyles, Washington, and Sehrawat (2009), found Social Workers devote at least 21% of their time dealing with pain issues. The phenomenological approach suggested by Morrissey (2011) observed that the pain and suffering older patients experience must be treated through the person and family-centered approaches supported by the interdisciplinary group and social work expertise. The holistic approach to pain management requires consideration for the use of analgesic drugs, opioids, and complementary therapies by all disciplines in treating the pain experience of the older adults at the end of life (Dalacorte, Rigo, & Dalacorte, 2011).

A cost analysis study on early interdisciplinary interventions for 994 patients with acute low back pain was conducted by Rogerson, Gatchel, and Bierner (2009). Pain severity was quantified using the Million Visual Analog Scale (MVAS) tool which measures pain on a zero to 10 scale. In comparison of early intervention (EI) for pain consisting of cognitive-behavioral and physical therapy with the Treatment as Usual

Group (TU) which provided pharmacological intervention, a significant decrease in return treatment appointments for the EI versus the TU group which was found to ultimately decrease overall costs. The study identified a difference in response to early interdisciplinary treatment for chronic back pain that continued a positive trend of improvement from three to 12-months. A limitation to this study was the unknown variability in cost relating to chronic pain in different health care environments. Accessibility to the use of the MVAS tool is specific to this study. A standard NRS measurement tool provides a generic application to a variety of practice areas. The study also focused on a reasonably healthy population that was non-hospice associated. Further study is indicated to establish the relationship between the quality indicators of decreased pain and type and timeliness of IDG interventions.

Current Content

Pain and pain management have been the topic of recent research. Researchers have explored different aspects of pain assessment and management with different populations and in different settings. More recent research includes the interdisciplinary approach to pain management.

Pain Management

The burden of pain continues to plague the dying patient and disrupts the quality of life. Though the intensity of pain was not correlated with the tumor location, severe pain demonstrates a strong co-relationship with poor perceptions of quality of life (α 0.81) (Oliveira et al., 2014). The group study of 127 patients with T4 tumors of the head and neck cancer showed significantly elevated levels of pain (p=0.001 Statistical significance of pain investigated by Oliveira et al. (2014) found a high level of symptoms associated with the severity of pain (Cronbach's α coefficient of > 0.70). The pain can adversely affect outcomes for quality of life such as physical (p=0.024), emotional (p=0.039), cognitive (p=0.158), and social functioning (p=0.002), and financial difficulties (p=0.0006). There is a direct relationship between pain severity and improved quality of life (p<0.001) outcomes with decreasing pain. The study showed correlations between the severity of pain (measured by self-reporting pain on a zero to 10 pain scale) and the stage of cancer establishing the importance of evaluating pain and symptoms before treatment (Oliveira et al., 2014).

A longitudinal study by Hansen, Leo, Change, Zucker, and Sasaki (2014) shows the importance of providing pain evaluation and treatment options within specific timeframes related to the origin of pain for end-stage liver disease patients. This retrospective cohort study investigated the perceptions of pain identified by 20 outpatients diagnosed in end-stage liver disease with documented or self-reported pain levels of three or higher on the zero to 10 numeric rating pain scale over a three-month timeframe. Findings identified that patients taking pain medication (M = 5.77), asking for help (M = 5.66), and tranquilizer usage (M = 5.60) had improved pain management with a mean greater than five (Hansen et al., 2014). Patients in the study experienced 33% pain relief when taking more than one pain medication. This indicates a deficit in the number of patients that receive benefit from pain medications due to end-stage disease. Providing combined pharmacological and non-pharmacological pain management strategies can improve pain management outcomes (Hansen et al., 2014). Limitations of the study included a small sample size with a lack of cohort comparison groups, which reduced the statistical power and significance of results. The ability of the diminutive sized survey to produce reliable results could increase the possibility of bias. The generalization of results of the study supports the need for specific investigation into self-reported pain and rapid interdisciplinary interventions with establishment of timing of intervals for care. A study that is low in statistical power reduces a statistically significant effect with low reproducibility of results (Button et al., 2013).

The uniqueness of the pain experience at EOL requires palliation of symptoms. Sander (2014) proposed the role of palliative care that offers pain relief and affirms life. Treatment of pain involves addressing the underlying cause of pain through assessment strategies (Sander, 2014). This cohort case study focused on the holistic interventions including pharmacological and complementary/integrative therapies by home care staff to patients who experienced symptoms of pain, fatigue, breathlessness, confusion, insomnia, and anxiety encountered at the end of life (Sander, 2014).

Application of quantifiable measurements can offer reliability and validity in the interpretation of pain. Hutt, Fink, Nelson-Marten, Jones, & Kutner (2013) recognized the importance of using surveys such as the Medication Adherence Report Scale, Beliefs about Medications Questionnaire, Brief Pain Inventory, and the McGill Quality of Life Questionnaire to quantify perceptions of pain. Measurement of pain provides time-specific information and serves as justification for patient satisfaction with pain management strategies (Hutt et al., 2013).

Measurement of the experience of pain at the end of life provides quality improvement possibilities and offers evidence for further instrument and data development (Lendon et al. 2015). Lendon et al. (2015) conducted a systematic review of literature related to the assessment of pain and found inconsistencies in the survey instruments provided to patients at end of life. Additionally, the review of the literature revealed most surveys assessing the perception of end-of-life care occur after the patient's death and are completed by the family or informal caregiver. According to Lenden et al. (2015), standardization of survey instruments requires specific questions that relate to the unique experiences of patients at the end of life that will measure their satisfaction of care. The use of survey instruments designed for end of life will provide the opportunity to assess symptom management outcomes for this vulnerable population. Pain measurement relies on the efficient processing of assessment information thereby preventing observer bias in the perception of pain (Hadjistavropoulos et al., 2014). Gregory (2014) recommends the use of the Provocation/Palliation, Quality/Quantity, Region/Radiation, Severity, and Timing (PQRST) pain analysis method to assist the healthcare professional in identifying the character of pain. The PQRST mnemonic tool provides support in exploring the patient's pain experience that may be affected by environmental factors with precision in locating the specific area of pain (Neale, 2012).

A longitudinal, exploratory pilot study completed by Dalton, Higgins, Miller, Keefe, and Khuri (2015) used a convenience sample of lung cancer patients to compare measurements of pain. Results of the study found patients who experience higher pain intensity (greater than three on a numeric rating scale) also had higher incidence of adverse effects on psychosocial measurements for pain. The study included 12 subjects diagnosed at various levels of cancer development who were initially pain-free when beginning the study. Measurement of pain levels at six-months indicated half of the participants experienced significant pain intensity. The study found the psychosocial impact on pain affects pain intensity and function (Dalton et al., 2015). Limitations of the study included the small sample size and the focus on patients admitted to a VA hospital for treatment leaving determination of terminality unknown and limiting generalizability.

Blum et al. (2014) compared pain assessment measures utilizing a convenience sample of 315 participants receiving palliative care in sub-Saharan Africa. The study compared the number scale, hand scale, face scale and the Jerrycan scale. Results showed significant ($p < 0.001$) correlation between pain scale scores (0.88 to 0.73) and symptom scale scores (0.88 to 0.72). Specifically, the hand and faces scale scores were highly correlated with verbal scores when measuring pain and symptoms. Limitations of the study included the recruitment of a convenience sample, the procedure of presenting the scales in the same order, and the failure to measure the literacy of the participants.

Pain management using a variety of methods has been the focus of recent research. A retrospective study by Petracci et al. (2016) focused on the evaluation of changes in pain intensity and the response to rapid treatment of pain using a population of newly admitted hospice patients. The study used the Numeric Rating Scale of zero to 10 and was limited to a seven-day timespan following admission. The chart review of 194 cognitively competent patients utilized the assessment of self-reported pain at admission and at the end of seven days. Ninety-eight patients were excluded from the study due to discharge or death, non-usage of analgesic medications, or cognitive impairment. Results showed that there was an overall reduction in pain scores ($P<0.004$) with significant reduction ($P< 0.001$) in moderate to severe pain from admission to the second day of analysis (Petracci et al., 2016). The primary method of pain control was the use of opioid and analgesic medications without reference to IDG interventions although the palliative care group included physicians, nurses, physiotherapists and psychologists. Investigation of the IDG approach to pain management needs to progress beyond the use of opioid medication for the treatment of pain and focus on the holistic method of pain management mandated by hospice. Groninger and Vijayan's (2014) study on the pharmacological management of pain at the end of life found a treatment approach to pain requires individualized assessment. Pharmacological pain management requires agents that target specific types of pain to provide adequate pain control (Groninger & Vijayan, 2014).

According to Peteet and Balboni (2013), spirituality and spiritual well-being correlate with the perception of improved quality of life in cancer patients, cancer survivors, and caregivers. Specifically, meeting the spiritual needs of patients at the end of their life assists with psychological and spiritual adjustment as well as with less aggressive care at the end of life (Peteet & Balboni, 2013). Despite that belief of clinicians that spiritual care as an appropriate intervention, patients report that they provide it infrequently. Studies focused on the effectiveness of spiritual care have been the subject of recent research. Pok-Ja and Soo Hyun (2014) conducted a meta-analysis of studies using spiritual interventions for patients with cancer. Fifteen studies with 889 patients with cancer of any type and any treat mode were reviewed. A group receiving spiritual interventions consisting of religious or existential aspects was compared with a control group of patients receiving usual care or other psychosocial interventions. The analysis found spiritual interventions offered moderate and significant effects on oncology patient's depression, understanding the meaning of life, and spiritual well-being. Limitations of the study include the heterogeneity of the research designs, the inclusion of unpublished research, and the high number of patients with advanced cancer represented in the studies.

Hospice

The focus of hospice is to provide comfort and quality of life for patients with six months or less remaining life (Connor, 2007). The total care concept of hospice incorporates a multifaceted approach to pain and symptoms experienced by the patient. Pain as a personal experience depends on an interactive team approach to assist hospice patients to live comfortably until death. Palliative care for pain management is a separate entity offered for the specific needs of patients experiencing grave illness and supports health care services before and during hospice care (Connor, 2007). Centering on pain control will contribute to the development of expertise offering application to a multitude of healthcare settings.

Under the Medicare Benefit in 2010, 83.8% of beneficiaries eligible for Medicare were provided reimbursement opportunity for hospice services (NHPCO, 2013). Hospice services reimbursement for Medicare-eligible patients declined to an estimate of 47.3% in 2013 (NHPCO, 2014). The impact on financial feasibility for hospices will continue to be negatively impacted by changes in the Medicare reimbursement policy as 91% of hospice patients rely on Medicare/Medicaid for reimbursement (Hospice Action Network, 2016). The decline concerning Medicare hospice reimbursement rates will continue the adverse trend of decline for financial support of hospice services. The sequestration will remain until 2024 for deficit reduction impacting hospice with cuts to payments by 2% per year (Hospice Action Network, 2016). As the primary reimbursement provider of end of life care in hospice, Medicare mandates quality services be implemented for all patients inclusive of interdisciplinary interventions for pain management. In January 2016, CMS included a two-tiered routine home rate and service intensity add-on reimbursement requirements which increase payment for visits for the social worker and or RN during the first 60 days post-admission to hospice and the last seven days of life (Hospice Action Network, 2016). Providing additional service including the chaplain, music therapist, and complementary/integrative interventions during this time frame will offer benefit for hospices to improve patient care and reimbursement possibilities. Two types of hospice organizations, for-profit, and not-for-profit, focus on the holistic treatment of pain and symptoms of end of life patients to improve quality care. Not-for-profit hospice agencies represent a smaller portion of the market share for the end of life care (Stevenson, Dalton, Grabowski, & Huskamp, 2015); however, the center of care continues to emphasize equal accessibility to Medicare vetted services such as with the interdisciplinary group treatment for pain and symptom control.

Hospice treats the whole person for pain and symptom management. Use of complementary or integrative therapies will enhance the holistic aspect of hospice patient care. The inclusion of complementary/alternative care and therapeutic pain medications in the treatment of patients is supported by the hospice interdisciplinary groups that manage the experience of end of life pain. High-quality care will require a diverse integration of treatment options for individualized care in hospice. Incorporating care for the physical, spiritual, emotional, and psychosocial aspects of pain within the hospice care model will improve patient outcomes. Expanding the care of patients who experience pain to include an interdisciplinary approach will improve holistic and individualized interventions of pain management in hospice.

Identifying quality of care for end of life patients requires application of measurable quality indicators. Morss Dy et al. (2015) investigated the ability to measure quality through a "What Matters Most" (MWM) project that identified 10 indicators. These hospice quality indicators included domains of structure and progress (a comprehensive assessment), physical aspects (observing for physical symptoms, pain interventions, and dyspnea assessment and treatment), psychological/psychiatric aspects (view emotional and psychological needs), spiritual/existential needs, and ethical/legal domains (Morss Dy et al., 2015). The ten hospice related indicators provide a value-based measurement tool offering quality indicators for hospice and palliative organizations. The current study extends the current knowledge related to pain intervention quality indicators that could support the assessment of timely IDG interventions to treat pain.

Outcome measures derived from the MWM quality indicators are an important element in evaluating the effectiveness of the IDG in providing quality of care. A medical record chart review of 100 patients conducted by Arthur et al. (2018) investigated outcomes of the interdisciplinary interventions provided to patients experiencing cancer pain who used opioids in comparison to non-pharmacological interventions through retrospective cohort statistics analysis. The intervention of the study reviewed the response by a Compassionate High Alert Team (CHAT) whose goal was to use communication focused on encouraging non-opioid or non-pharmacological interventions. This study demonstrated limitations due to the specific focus on aberrant opioid use in relatively ambulatory higher functional status patients with cancer. The study compared patients who took opioids with those who used only non-pharmacological interventions.

The limitation of hospice and palliative care driven research on quality indicators related to pain management in the hospice setting is evident in the literature review. Many studies used pain management as a quality indicator to assess patient satisfaction through IDG interventions. A study by Brendbekken, Harris, Ursin, Eriksen, and Tangen (2016) compared multidisciplinary interventions (MI) on musculoskeletal pain, depression and anxiety of 284 adults over a one-year timeframe. The study indicated a more rapid improvement in symptoms including anxiety, depression, reduction in physical complaints, and functional ability related to pain within three months of treatment by the IDG. The study identified pain through a self-reported measurement scale of zero to 10; however, the study did not include results of improvement specific to pain at completion. This study was not focused on the hospice patient's unique experience of pain but rather the secondary effects of uncontrolled pain.

Validation of end of life quality indicators is lacking. A study by Heyland et al. (2017) focused on identifying quality indicators for communication with patients and families experiencing an end of life situation. Decision-making during the chaos that occurs during a terminal illness requires support from the IDG especially from the social worker and chaplain. The study questioned a total of 509 patients and family members in 12 hospitals on their overall perception of communication on advanced care planning and identified that few healthcare organizations measure quality of palliative care or end of life care. The limited sample size and lack of hospice study sites add a major limitation for this study on communication and end of life. Using standardized outcome measures presents a framework for verifying comfort measures that are effective for patients and their families (Jacob, Edbrooke-Childs, Law, & Wolpert, 2017).

Interdisciplinary Group Therapy

The physical and psychological effect of a multifaceted approach to pain in the hospice patient may provide useful options for pain management. Interdisciplinary management of pain requires coordination of services through effective communication focusing on a unified, comprehensive treatment (Gatchel, McGeary, McGeary, & Lippe, 2014). An early intervention and referral to hospice followed by the interdisciplinary group for pain is important for effective pain management (Ferrell et al., 2017). Rash et al. (2018) conducted a retrospective cohort study over 12 months to explore the effect of the IDG approach to pain management in the emergency room. The sample consisted of patients with chronic pain who frequently visited the emergency room for pain control. Results of the study found that providing patients with a comprehensive pain assessment and development of patient-specific plans of care related to pain reduced frequency of emergency room visits and improved clinical outcomes for patients with chronic pain (Rash et al., 2018; Cea et al., 2016). Providing electronic medical record information to other healthcare providers was also found to improve appropriateness of interventions (Rash et al., 2018).

Utilizing an interdisciplinary model of care when treating pain through collaborative interventions improves outcomes by efficiently promoting communication among group members. A qualitative study by Salsbury et al. (2017) identified that interdisciplinary education on pain improved attitudes and knowledge of providers improved pain management for older adults experiencing back pain. The study limitations include the ability to apply the results to a quantitative study. This qualitative type of study would be difficult to replicate due to the fluidity of constant change in circumstances for data collection.

Research has indicated the IDG approach to pain management supports the reduction of opioid therapy for the patient's pain relief need. Huffman et al. (2017), collected longitudinal data using retrospective study techniques on the patient's response to the reduction of continual use of opioid therapy for chronic pain using IDG interventions. The ex-post facto retrospective descriptive comparative study analyzed data from six and 12-month intervals on the response to multidisciplinary treatment for pain management in an outpatient setting. The study included 1,510 patients with chronic pain receiving rehabilitative treatment between 2007 and 2012. The study compares the pain levels of patients who took specific milligram dosages of opioids, and amount of opioid taken on admission and discharge. Specifically, opioid therapy, dosage treatment completion rates, pain severity, and functional impairment related to pain, depression and anxiety were compared. The clinical significance of the study was a ≥ 50% decrease in pain measures with IDG interventional treatment. Limitations of the study include an absence of a cohort comparison control group and a high attrition rate. (Huffman et al., 2017).

A randomized control clinical trial study using an impact questionnaire as a data collection design provided retrospective cohort statistics showing a direct relationship between interdisciplinary interventions and management (Martin et al., 2013). The trial included 180 fibromyalgia treatment patients randomly assigned to either a control group-those who received standard pharmacological interventions, or an experimental group-those who received standard pharmacological interventions and interdisciplinary treatment from a physician, psychologist, and physiotherapist (Martin et al., 2013). Results of data from the self-administered questionnaire showed the experimental group who receive interdisciplinary care had less pain and improved functional ability. These findings were supported by a qualitative study by Bourgault et al. (2015) that explored the effect of multidisciplinary group intervention on self-reported pain of fibromyalgia patients. This mixed method and randomized trial study focused on identifying if there was a statistically significant impact of the interdisciplinary group interventions on fibromyalgia pain management, perceived pain, and functioning in quality of life for patients.

Qualitative interviews with 43 patients were conducted to compare the efficacy of pain intervention for fibromyalgia. Bourgauld et al. (2015) found at the end of providing multidisciplinary interventions for fibromyalgia pain, ≥ 50 % (36% versus 12%) of patients in the multidisciplinary intervention group demonstrated a significantly higher pain relief response. The pain relief response continued to be significantly higher (33% versus 4%) at three months post intervention. These findings support the need for further research on interdisciplinary pain interventions and self-reported pain in a hospice setting.

Perez, Olivier, Rampakakis, Borod, and Shir (2016) completed a retrospective analysis of newly admitted outpatients to the McGill University Health Canter Cancer Pain Clinic. The study included two follow up (FU) reevaluation/treatment visits to establish a relationship between an interdisciplinary approach to pain treatment and patient self-reported pain and symptom relief. The interdisciplinary group using pharmacological and non-pharmacological interventions included the nurse, and physicians specialized in palliation, anesthesia, and radiation oncology. The study result showed that 53% of the patients receiving interdisciplinary care self-reported a 30% decrease in pain with a 52% decrease in short acting opioid use study.

Results of the study of 199 patients in a neuromuscular pain clinic setting demonstrated a decline in severity of pain using the VAS (Visual Analogue Pain Score: zero to 10) measurement system by the third visit ($P < 0.0042$). Psychological, educational, and physiotherapeutic interdisciplinary group interventions were measured through observation in a study on interdisciplinary group management of fibromyalgia by Martin et al. (2014). The current research focused on interdisciplinary group interventions for pain management in the hospice setting through documentation review.

Review of the literature demonstrated the essential responsibility the nurse has in pain control for patients in hospice. Coyne, Mulvenon, and Paice (2018), endorse that nurses advocate for holistic and effective pain management for end of life patients. Montgomery and McNamara (2016) maintained the use of multimodal management for pain through nursing group leadership methods as beneficial for positive outcomes. The hospice nurse supports holistic patient care by assisting with coordination with the IDG. The nurse is responsible for assessing the patient, administering medications, family counseling, and provide provision of care to the patient (CMS, 2016). Ashley and Fasolino (2016) confirmed the understanding that registered nurses are an integral team member in providing beneficial palliative collaborative management of the patient's pain and symptoms and assist in the transition from curative to comfort care. The study used a voluntary survey method to assess predetermined questions related to palliative can hospice care for nurses within a large acute care health system. Of the 803 surveys, there was an 88% return rate that revealed 62% of RN's used palliative interventions such as therapeutic touch, active and passive listening. Additionally, RNs reported a lack of skills in communication with patients and families and would benefit from additional education on nonconventional interventions such as guided imagery and use of warm/cold compresses. The core of hospice care depends upon a functional and collaborative IDG guided by the physician and nurse to achieve patient-focused goals of care. Providing a shared platform regarding pain management that encourages multimodal interventions through IDG participation enhances quality care for hospice patients. Encouraging the collaboration of the patient and primary caregiver in final decisions on symptom management when issues exist, strives to support the mission of the IDG meeting objective of comfort (Washington, Oliver, Gage, Albright, & Demiris, 2015).

Complementary/Integrative Therapy

Although pain requires utilization of multiple therapy options that go beyond standard medication to additional complementary/integrative interventions are limited. Complementary/integrative therapies improve psychological therapies that act as deterrents to pain by improving patient self-control and autonomy (DePaolis et al., 2018). Current guidelines established for Medicare reimbursement do not include complementary/ integrative therapists or CAM (Complementary and Alternative Medicine) as part of the interdisciplinary group (Dain, Bradley, Hurzeler, & Aldridge, 2014). Music therapy as an alternative treatment for pain and symptoms is used by one-third of U.S. hospices (Dain, Bradley, Hurzeler, & Aldridge, 2014). A palliative care randomized controlled trial by Warth, Kebler, Hillecke, and Bardenheuer (2014) identified music therapy as a complementary/ integrative therapy used to improve quality of life by cultivating self-rated relaxation, well-being, and managing acute pain. The randomized control trial interventional study on 84 cancer patients included a patient control group and the experimental group which provided music therapy and relaxation exercises. The comparison study examined heart rate variability and pulse indicators to show relationship to pain, relaxation, and feelings of well-being (viewed within the study as a quality of life indicator). The study results indicate that music therapy improves self-identified well-being (quality of life), and relaxation for cancer patients supported also by the high frequency variations in heart rate. Reduction in pain response could not be determined as the pain was already under control prior the start of the study. Limitations of the study included the small sample size without designation of time relevant assessment of pain at intervals.

In the treatment of the complex dilemma of chronic pain, individual disciplines need to bring their own knowledge and experience and integrate within a team experience to provide a beneficial treatment plan (Bonica, 1990). The core group relating to hospice includes the physician, nurse, social worker, and chaplain. To provide holistic interventions, the group may communicate and integrate further treatment modalities with other disciplines such as music, massage, biofeedback, physical, psychological therapists' therapy. The synergistic approach in cohesively working with the patient in developing the plan of care creates improvements in quality and delivery of care (Mueller, 2016). The biopsychosocial model of pain is the heuristic approach to treating and understanding chronic pain requiring greater coordination of services through an interdisciplinary approach (Gatchel, McGeary, McGeary, & Lippe, 2014).

Leclerc et al. (2014) conducted a systematic review of studies focused on IDG and found a limited number of high-quality studies related to the provision of palliative care to end of life patients by interdisciplinary groups. Ellington, Casarett, Reblin, Clayton, and Cloyes (2015) utilized a retrospective cohort study of electronic medical records from 12 not-for-profit hospices and found that the interdisciplinary group was used more in the last seven days of life for hospice patients ($p<0.001$). Clustered linear regression models used by hospice identified visit frequency by core group members to include from highest to least visit: the nurse, social worker, hospice aides, and chaplain. The study identified a significant pain level ($P<0.001$) of 40.7% for end-of- life patients which may have prompted a change in frequency of visits for the IDG (Ellington et al., 2015). These findings offer justification to advocate for a timely response by the IDG in the management of pain for the end of life patients. Further investigation is warranted to identify a retrospective cohort comparison of increased pain, IDG interventions, visit frequency, and improvement in pain level.

Perez, Olivier, Rampakakis, Borod, and Shir (2016) completed a retrospective chart analysis of 71 patients to study the benefits of an interdisciplinary approach to pain management in cancer patients. The study found over half (53%) of the patients responded to interdisciplinary pain interventions with a 30% reduction in pain (Perez, Olivier, Rampakakis, Borod, &Shir, 2016). The study indicated that nearly half of the participants in the study did not meet the criteria of completion for the pain questionnaire which led to exclusion from the study. This loss of potential data for analysis may have decreased reliability of the study. Limitations of the study also included inconsistency in the interdisciplinary group seeing the patient at least three consecutive times.

Noreika and Coyne (2015) concluded the complexity of pain and symptom management mandates an interdisciplinary approach that offers a variety of choices for the patient. The cost-saving benefits of utilizing a biopsychosocial model in the treatment of pain benefits from a multimodal approach (Noe & Williams, 2012). A multimodal approach to pain management uses a balanced treatment technique of multiple mechanisms to control pain and multidisciplinary interventions (Elvir-Lazo & White, 2010). Providing a multimodal approach to treating pain for patients supports a holistic care perspective on optimal hospice care. Management of pain through the integration of interdisciplinary interventions may reduce suffering for patients facing the challenges of impending death (Noreika, & Coyne, 2015).

Review of a study by Ferrel et al. (2017) suggests that interventional care by the interdisciplinary group will significantly improve quality of life, symptoms, and distress for cancer patients. The prospective, quasi-experimental study viewed symptoms and interdisciplinary interventions over a 12-week timeframe. Significantly improved pain response to treatment by the interdisciplinary group was indicated ($p< 0.001$). The study model shows inconsistency in determining which intervention produced the observed outcomes. The sequential design of the study also prevented the discovery of patterns in pain episodes. This study shows the importance of using interdisciplinary pain management protocols.

Selecting the best interventions for pain poses a challenge for the interdisciplinary group. Patients choose to control their own decisions on pain management to avoid becoming a burden on their families (Larrson & Wijk, 2007). Self-determination is a fundamental component of patient autonomy and requires a multidisciplinary integrative approach in the development of a pain plan (Zanchetta & Moura, 2006). The Medicare IDG core group in hospice includes the medical director, nurse, social worker, and chaplain (Doka, 2006). The added benefit of complementary/integrative therapies implemented through the expertise of the music therapist and physical therapist may promote a holistic approach to the care of the patient in hospice. The proposed study may enhance knowledge in the use of timely IDG interventions for the treatment of pain for end of life patients in hospice. The proposed study may also address the gap in literature on the evaluation of the timing of the IDG interventions.

Theoretical Framework Literature

The proposed research will utilize King's Theory of Goal Attainment (1981) as a framework to explore the association between IDG approaches to pain management and the self-reported level of pain in the hospice setting. King's Theory of Goal Attainment is based on integration and interaction of three systems: personal, interpersonal, and social (King, 1999). The perceptual aspect of the Goal Attainment Theory will influence the interactive processes between the three systems. Pain as a perceptual and personal experience for the individual will affect interpersonal and social aspects relating to activities of daily living. As a middle-range theory, the Goal Attainment Theory will encourage a transactional process that promotes mutual goal setting between health care and patient to improve beneficial and autonomous outcomes for the management of pain. Congruency between the client and their goals requires relevant attainable perceptions, communication, interactions, and transaction (King, 2007). The clinical application of the Goal of Attainment Theory dictates education, time, resources, and institutional support for end of life decision-making processes (Goodwin, Kiehl, & Peterson, 2002).

King's Goal Attainment Theory, as a systems theory, has been utilized in program development planning processes to assist in decision-making (Norgan, Ettipio, & Lascome, 1995). Decision-making depends upon clinical pathways that include a holistic approach. Multidisciplinary application of a patient-centered approach to patient care is integrated into the clinical pathways of care and supports the use of goal attainment theory (Khowaja, 2006). Goodwin, Kiehl, and Peterson (2002) suggest that the Goal Attainment Theory can be used to mediate conflict and promote goal attainment of self-efficacy in creating a foundation for advance directive decision-making. In practice, assisting the patient in understanding options by encouraging self-determination in the decision process, and supporting the advance directive choice demonstrates the principle of autonomy created from the goal attainment theory of interrelating personal, interpersonal, and social systems. King (1999) postulated that the method of goal attainment supports ethical decisions by improving the transactional process by increasing the nurse-patient-family communication and interaction. Mastos, Miller, Eliasson, and Imms (2007) conducted a study to assess goal-directed training and improvement of functional activities of daily life by using Kings Goal Attainment Theory. The study found a direct relationship between the application of using performance-based individual interventions and goals to improve self-care task accomplishments. A limitation to practice for the results of the research relates to the small percentage of comparison individuals in the case study.

King's interactive goal attainment theory was applied by Williams (2001) to promote identifying interactions between the nurse and patient in an emergency room and rural setting improving communication and perceptions of care. Understanding the complexities of personal, interpersonal, and social systems of goal attainment will assist the nurse in generating substantive knowledge to promote positive outcomes. The interaction of patient and nurse with environmental factors in an emergency room will provide the opportunity for interventional changes through mutual goal setting.

Norgan, Ettipio, and Lascome (1995) applied King's framework to an occupational health nursing opportunity to create a multidimensional approach to the interventions for treating and preventing carpal tunnel syndrome (CTS). Changing behaviors will require human interaction with conditions and social systems. Recognition of early signs and symptoms of CTS along with promoting accountability for reporting in a timely and accurate manner within the social practice will encourage coordination in care and achievable pain management as goal attainment. The study by Norgan, Ettipio, and Lascome (1995) has limitations related to the complexity of analysis required to show group levels of transactions. The study offers application of King's theory showing interactions between the patient and health professional as quantifiable, observable, and able to advance utilization for further research on a social system level.

Khowaja (2006) presented a quantitative study method utilizing King's goal attainment theory to support a multidisciplinary clinical pathway of care. Delivery of care for patients with transurethral resection of the prostate (TURP) was studied to establish outcomes of clinical pathway interventions that may affect goal attainment of positive results of lower postoperative complications, costs, and improved patient satisfaction with care. According to Khowaja (2006), communication is a crucial element in goal attainment within a multidisciplinary model of care requiring critical thinking, and transactional collaboration for successful outcomes. The purposeful interaction with other systems such as social, personal, and environmental will offer a multidisciplinary group the ability to assist in individual decision-making processes focusing on change in behaviors. The use of non-equivalent groups to answer the research question and verify the hypothesis in Khowaja's study (2006) limits the audience to only one target population with multiple variances such as the physician, nurse, discharge, post-operative issues, financial issues, and patient satisfaction.

Methodological Literature

Minimal current research was identified related to methods that specifically define the relationship of type, number, and location of hospice care relating to change in pain levels through interventions provided by the IDG. Recent investigation into the existence of quantitative IDG research studies was insignificant to support the current research. Quantitative research offers the researcher numerical data for analysis by converting data into observational numbers. Few existing quantitative studies focused on the aspects of IDG collaborative and communication. Analyzing the IDG experience through quantitative research by Washington et al. (2017) identified barriers, experiences, and perceptions of collaboration within a hospice IDG. Collaboration is an important component of the IDG and may assist in identifying effective implementation of pain interventions. Kobayashi and McAllister (2016) also utilized a qualitative research approach to identify perspectives of the hospice IDG role on the team as collaborators; however, did not examine interventions specific to providing patient comfort.

Research Design Literature

Correlational design may allow the researcher to examine for differences in pain levels related to the interdisciplinary interventions in hospice. DeBar et al. (2017) used an effectiveness-implementation hybrid clinical trial correlating interdisciplinary behavioral intervention in conjunction with current healthcare medical interventions. Multimodal interventions including behavioral approaches to pain management improves overall pain treatment for patients with chronic pain (DeBar et al., 2017). Geum et al (2019), found through a retrospective correlational design study a decrease in pain intensity for palliative care unit cancer patients who use a multidisciplinary collaborative team approach to care. The correlational aspect design for these studies identified relationships between variables which supports the validity for pursuing further investigation using this design.

Conclusions

The complexity of the experience of pain at the end of life requires a multimodal methodology in developing holistic interventions to improve quality of life. The literature review indicates that interdisciplinary response through interactive patient contacts to provide comfort in the hospice setting has not been adequately assessed. A formal evaluation of an interdisciplinary response to pain management as compared to patient self-reported pain levels would provide valuable evidence for optimal patient pain treatment plans. Identification of a significant gap in the literature indicates the absence of interdisciplinary management protocol for pain management that utilizes the goal attainment theory. King (1996) equated goal attainment to the integration of interrelated actions and the patient experience of a peaceful death (Kohwaja, 2006). Fulfillment of the patient's goal rather than the healthcare provider's goal is the sustenance of the Goal attainment theory that requires further application in studies. There are diverging pain management interventions available for patients, but little is understood about who selects interventions. Additional knowledge is needed to understand if there is an added benefit of discipline-specific patient interactions for patient care and if quality indicators support a rapid IDG approach to hospice care. Research indicates the importance of assessment strategies that encourage a holistic group approach in the treatment of pain individualizing interventions. The current literature reviewed identifies opportunity for further investigational research using quantitative method sampling techniques.

Chapter three presents the method of investigation by examining the study intention, questions, and hypothesis. The population and sampling procedures will be reported. In expanding knowledge on the research design, the interventions and instruments to be used will provide accuracy for the analysis of collectible data. Ethical considerations of the study that support prudent research practice and promote an environment with minimal physical or psychosocial pain or harm to the participants will be described in detail. Finally, the statistical analysis procedures are used to describe and compare the relationship among the type and number of IDG interventions and the self-reported change in pain level are described. Observational data provided through the application of quality indicator measurement tools will provide quantifiable information to support the study of an IDG approach to provide pain relief for the hospice patient.

Summary

The review of the literature indicated a need for research to explore an interdisciplinary approach to pain management for patients admitted to the hospice setting. The gap in knowledge in quality indicators for quality patient/family care demonstrates a need for further research. Ultimately what matters most to the patient and family facing the challenges of end of life is to establish what is important to them for measurement. The framework offered by the ability to measure quality indicators related to pain management provides a basis to advance knowledge in the use of IDG interventions to holistically treat the patient. Currently, published research on the effects of interdisciplinary interventions on patient pain relief comfort and health outcomes in the hospice setting remains limited. Support from the literature for the proposed study exploring the relationship among the type and number of IDG interventions on the self-reported pain levels of hospice patients is evident. Interdisciplinary pain management is required to lower the patient's pain levels in a manner consistent with national quality assurance standards. Quantitative longitudinal cohort studies, retrospective cross-sectional descriptive comparative studies, correlational, quasi-experimental, non-equivalent control group studies, chart reviews, and qualitative case study methods in research were analyzed for evidence of interdisciplinary interventions or hospice pain treatment. Integrating theory into practice provides standardization for the development of research supporting patient care practice. Limited knowledge attained through a literature review does not prevent the application of theory towards interdisciplinary interventional development for a group approach to managing pain. The integration of King’s Theory of Goal Attainment supports a framework for an interdisciplinary response to pain management by integrating the pain experience into the perceptual, personal, and social aspects of patient care. The plan of care as a patient's goal in creating an environment based on the quality of life care utilizes the principles of King’s Theory of goal attainment through a patient-centered holistic approach.

Chapter 3

Research Methodology

The study purpose was to determine the relationship of factors related to IDG approach to patient care and the change in the patient's self-reported level of pain from admission to 96-hours post admission to hospice. Specifically, the study explored the factors of type and number of IDG patient interventions offered to hospice patients within 96-hours of admission. Additionally, the study explored the change in self-reported pain levels based on the type of hospice setting (home, hospital, nursing or rehabilitation facility, assisted living facility, or hospice-specific care facility).

The review of the literature in Chapter 2 supports the need to identify the relationship of the type and number of IDG interventions and the change in patient self-reported pain through quantitative research method. The quantitative study utilized a correlational design to explore the relationship among the variables of interest. Quantitative data recorded in the patient's electronic medical record related to patient pain level and IDG interventions was collected through a retrospective chart review. Quantitative data allowed exploration of the holistic approach to the management of pain through the variety of IDG interventions provided to hospice patients. Data collection allowed the identification and description of the types and number of IDG interventions provided within the first 96-hours following admission to hospice. Additionally, quantitative measures of the patient's self-reported pain levels upon admission and at 96-hours post admission was collected from the electronic medical record (EMR). Statistical analysis using parametric and nonparametric correlational tests was used to determine the relationships among the variables, type of IDG intervention, number of IDG interventions, and change in level of pain. Chapter 3 presents a comprehensive review of the research method and design, the location of study, population, and sampling. This section will also describe consent, confidentiality, and data collection methods as well as methods of statistical analysis. Potential threats to the reliability, and validity of the study results will be discussed.

Hospice patients report inadequate pain control within 48-hours of admission to hospice services (National Hospice and Palliative Care Organization, 2013). Herr et al. (2010) found 75% of Hospice patients receiving treatment experience self-reported uncontrollable pain and an average of 51% of hospice patients experience poorly managed pain. According to the literature, there is a deficiency in the control of pain for hospice patients. It is essential to provide hospice patients with access to all pain management strategies available. Research is necessary to establish the benefits of rapid IDG approach to patient care that is pain-specific to the hospice patient population. The research study explored the relationship among the type and number of IDG interventions and the self-reported change in pain levels during the first 96-hours of hospice stay. Pain management provided through an IDG approach to patient care offers the potential to improve the quality of life for hospice patients. The nature and philosophy of hospice care mandates timely and comprehensive interventions to reduce pain and enhance comfort for EOL (end of life) patients.

Research Method and Design Appropriateness

Creating new evidence requires a scientific investigation that generates truth-finding information. The use of standardized measurements adds reliability and validity to research studies (Roberts, 2010). This quantitative study used a correlational design to determine the association between quantified variables. Although experimental research decreases the introduction of bias into study results, a pure experimental design was not feasible for the research as this would deny beneficial care on an equal basis. A retrospective study utilizing electronic medical record data was selected as it allowed the quantitative evaluation of IDG interventions and self-reported pain level of subjects admitted to hospice. Dealing with a vulnerable study population requires maintaining safeguards for the protection of subjects. The use of data recorded in the patients' electronic medical records was inconspicuous to the study subjects and increased the building of evidence while assisting in understanding disparities in the delivery of palliative care (Carlson & Morrison, 2009). Carlson and Morrison (2009) found that studies on groups provide good evidence to identify differences in exposure and outcome over time. The research used electronic medical record data recorded by a variety of disciplines to determine the association between factors related to the IDG approach (type and number of interventions) to patient care and the patients' self-reported pain level. Data entry in the EMR occurred in real-time following patient interactions. Data was collected by the researcher retrospectively from the electronic medical record beginning from the time of admission through 96-hours post-admission. Organizational requirements mandated measurements of pain at admission, 48-hours, 96-hours and at every IDG discipline visit. The 96-hour window for data collection was based on the short duration of patients stay in the hospice setting and the requirement for timely pain management upon admission to hospice. Prior to data collection, the electronic medical records were reviewed to determine criteria for participation in the study and the initial level of patient pain perception.

The quantitative method provided a tightly controlled design with the collection of statistically measurable data for analysis. The ability to generalize study outcomes and answer specific research questions supports fundamental scientific inquiry through quantitative applications of research (Creswell, 2014). Consideration of the vulnerability of the study population and the impracticality of controlling the independent variable excluded a quantitative experimental research method. A quantitative approach, such as a medical records data collection study, allows the researcher to identify one variable as an independent variable when random selection is not a possibility (Spector, 1981).

The retrospective correlational design allowed for data collection at specific points in time that will determine the timeliness of the IDG interventions and the patient's pain level as a response to the IDG interventions. The design selected was based on factors that considered the type of research, the aim of validation for the investigation, and the vulnerability of the population, sample size, and timeframe due to limited survival rates and short hospice stay. Cost-effectiveness for completing a retrospective correlational design study was also a consideration. The ability to support the assumptions of the hypothesis and apply data for different types of research offered the ability to adapt results to future studies. Reduction in exposure to risk factors is supported by using cohort studies as observational designs that establish reliable and valid outcomes (Sedgwick, 2014). The application of a retrospective study investigates observations of pain levels which have occurred in patients who received IDG interventions. A disadvantage of using the retrospective correlational design was that it cannot determine cause and effect. The use of retrospective electronic medical record data protects the vulnerable hospice patient as it provided the ability to limit access to individual identifiable elements maintaining anonymity for the subjects in the study.

Alternative designs were considered for the proposed study but were deemed inappropriate. Exclusion of experimental design from the application was decided because of the vulnerability posed by a hospice study population. Quasi-experimental methods were assessed for possible application to the study but rejected because of the vulnerable population on hospice and possible violations of fair access to treatment. A qualitative study consideration required

in-depth observation of subjects and was eliminated as a possible method for data collection due to the fragile nature of the study subjects and the need for greater verbal responses from open-ended questions. The possible inclusion of a qualitative study increases subjectivity in interpretation of results and views the perception of pain as an experience rather than focusing on treatment of measurable outcomes of pain management. Such a design would also not allow quantification of type and number of IDG interventions.

Research Questions and Hypothesis

Enhancements of current therapies that concentrate on the holistic character of pain management provided the opportunity for healthcare providers to experience improvement in quality of life for patients. The following research questions and hypotheses were used to explore the relationship among factors of the IDG approach to patient care and the hospice patient's self-reported change in pain within 96-hours of admission to hospice care:

RQ1: Do the type and number of IDG patient care interventions predict the

change in

self-reported pain levels within 96-hours of admission to hospice?

H01: The type and number of IDG patient care interventions do not predict the change in self-reported pain levels within 96-hours of admission to hospice?

HA1**:** The type and number of IDG patient care interventions do predict the change in self-reported pain levels within 96-hours of admission to hospice?

In addition, the following sub research question and hypothesis will be addressed in the study:

RQ2: Is there a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

H02**:** There is no difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

HA2: There is a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

Population and Sample

The population for the study were end of life admitted patients to a not-for-profit hospice healthcare organization serving the community of Palm Beach and Broward Counties, Florida. The subjects represented a sampling of all patients that were admitted from within the same geographical area. The study group included 134 participants admitted between September 2, 2018 and December 31, 2018 who were 21-years of age or older with a prognosticated life expectancy of six month or less. These patients were admitted for self-reported pain level four or greater on a scale of zero to 10 (10 being the highest level of pain). The review required retrospective analysis of admissions over approximately a three-month period. The estimated population as of July 1, 2017 in the demographic area for Palm Beach and Broward included a population of 3,407, 028 (United States Census Bureau, 2018). The chosen hospice was a not-for-profit agency accredited by the Joint Commission with an average daily census range of between 1,800 and 2,000 patients. In 2016, there were 10,639 admissions to the proposed study hospice organization (G. Kent, personal communication, November 18, 2018). The hospice organization admits patients with serious illness prognosis of six months or less. All terminally ill patients with a prognosis of six months or less are admitted to the not-for-profit hospice regardless of age, sex, religion, or ability to pay. The study focused on those admitted patients to hospice who are 21 years of age or older. Interdisciplinary interventions for pain and symptom occur within multiple hospice care settings such as General Inpatient Units (GIP), Long-Term Care Facilities (LTC), and Routine Home Care (RH) (E. Hentshke, HR Resource TrustBridge Health, personal communication, 2016).

The process for data entry on the electronic medical record was initiated on the first patient contact with the admission nurse. Assessment of pain using the PQRST already in use by the proposed study institution identified the self-reported pain level of the patient. The study described the type of IDG intervention, the IDG provider, and the number of interventions provided within the first 96-hours following admission for identified pain of four or greater from admission. Retrospective data entered into the electronic medical record by the individual members of the IDG was collected and analyzed. IDG interventions consist of services provided by the following disciplines:

physician, nurse, social work, chaplain, and music therapist. All data entries to the electronic medical record was electronically stored in the Home Care Home Base Electronic Medical Record (HCHB®-EMR) database. Data relating to IDG, patient self-reported pain levels, type and number of interventions, and area of pain management care was extracted from the patient's electronic medical record (EMR) by the researcher.

Informed Consent and Confidentiality

In preparation for the study, consideration for the population was vital to prevent bias and promote adherence to ethical principles. The ethical principles of autonomy, beneficence, non-maleficence, fidelity, justice, and paternalism require vigilance when developing and implementing research relating to human beings (Burns & Grove, 2009). Consideration of informed consent, recruitment of subjects, and research procedures are dependent upon the ethical reporting of information (Connelly, 2014). Quantitative research reporting is in an aggregate format and requires protection of personal data due to the proposed larger group size of the pain study subjects. Preventing unnecessary burden on an already at-risk population requires added care to minimize any possible harm. Existing, standard data collection available through HCHB® report capabilities eliminated patient names from data to prevent bias and preserve anonymity. Collection of data was limited to facility computers that have Health Insurance Portability, and Accountability Act (HIPAA) regulated software concentrating on the protection of patient identifying factors.

The Hospice agency granted preliminary permission to access pain tool assessment data through HCHB®. Final approval occurred during the hospice organization's internal review process which consists of a reliance agreement.

Preapproval from the University of Phoenix IRB was required by the site agency to provide final approval for the study to commence. The ethical concern for working with end of life patients was that no intervention that may improve the quality of life could be denied. Identification of benefit versus risks in research must err on the side of beneficence for end of life patients. Human rights entitle the patient that participates in studies to have self-determination, privacy, confidentiality, autonomy, fair treatment, and the right to withdraw from the study if desired without harm (Burns & Grove, 2009). The retrospective descriptive comparative method utilizing previously collected data eliminated the possibility of unethical treatment of the subjects. Electronic medical record numbers without patient identifiers established anonymity. Using data from the patient's EMR posed no risk to the staff or patient population through the data collection and reporting process. It was anticipated and correctly established that the study met Hospice and University IRB criteria for an expedited review.

The use of electronic medical records for research purposes does not exclude HIPAA requirements. The five sets of rules that include privacy, security, identifiers, enforcement, and transaction rules protect the subject from random access and sharing of personal healthcare information (U.S. Department of Health & Human Services, 2016). All collected data was stored according to agency requirements of an encrypted USB storage device and secure personal computer with restricted password access. Assigned identification numbers for study groups and random numerals was used to avoid any opportunity for subjects to be identified.

Instrumentation

As a gold standard for hospice pain measurement, the reliability and validity of the self-reported Numeric Pain Rating scale (NPR) is supported through test-retest reliability analysis. The Hospice study environment utilizes a self-reported numeric rating of zero-10, the PQRST that indicates pain from negligible to severe for patients to self-report pain (Appendix A). Values of the pain scale are a numerical variable, and a summative analysis will provide objective data for analysis. Data collection instruments will include a self-reported assessment of pain for verbally responsive patients.

The Guide for Chart Review (Appendix B) was developed by the researcher and derived primarily from the Measuring What Matters Top 10 Quality Indicators Set (Morss Dy et al., 2015). Additional measures of IDG group collaboration and communication and pain measures were added due to the relationship of these components to the research proposal. It was expected all the targeted indicators were evident and easily obtainable from the patient's electronic medical record. The Guide for Chart Review provided a table for data collection and recording, supported by instructions for rating and coding the data. Evidence to support each indicator was considered as 1) complete, 2) incomplete or partially addressed, or 3) missing. Each member of the IDG was identified and the time of completion of intervention documented as 1 to 96 with 1 being the hour of admission and 96 indicating the 96th hour after admission.

Pilot Study

The study was a retrospective medical record review of patients admitted to hospice with a pain level of four or greater. The aim of the study was to determine the relationship of factors related to IDG approach to patient care and the change in the patient's self-reported level of pain from admission to 96-hours post admission to hospice. The pilot study was performed to address any logistical or ambiguity issues relating to the proposal. A review of sequential charts for 15 admitted-to-hospice patients with pain of a four or greater starting from September 1, 2018 was conducted. The information was collected from the patient's EMR using the proposed data collection tools. Results showed feasibility of using the rating scale measurement tool and established reliability and validity of the tool for the current proposed study. The measurement method used for self-reported pain indicators consistently showed significant and repeatable results that generated similar findings.

Of the 15 medical records reviewed for tool feasibility, two contained incomplete information and were excluded from the pilot study. The results are not included in the final study. Review of medical records indicated pain-related anxiety due to inadequate pain relief was not captured as a pain indicator measurement. An additional assessment for pain related anxiety was added to the pain tool to capture this data.

Validity and Reliability

It is crucial to demonstrate internal consistency and reliability for a study to ensure the validity of results (Vogt, 2006). Observing for pattern repetitions in the study over time will identify reliability. Validity in the study depended on convergent measures, identification of the correlation between measurements, and to what extent the data measures the variables of interest. The rigor of a study depended upon the validity and reliability of measurements. Efficacy is based on the congruency of the measurement tool and the concept being measured, while reliability determines the consistency of measures to establish the same response each time (Heale & Twycross, 2015). The scale of zero to 10 self-reported pain indicator instrument to measure self-reported pain is acknowledged as reliable and valid from previous research (Heale & Twycross, 2015). Chronic pain for veterans was tested using the Numeric Rating Scale (NRS) for reliability and validity test-retest and demonstrated (R=.84, $p< .001$) significance for use of the pain tool (Douglas, Randleman, DeLane, & Palmer, 2016). Validity and sensitivity of the Numeric Rating Scale for pain was assessed for critically ill adults (r=0.76, P<.001) validated the use of the NRS for self-reported pain levels (Rahu, Grap, Ferguson, Joseph, Sherman, & Elswick, 2015). The measurement Tool offered in Home Care Home Base ® (HCHB) is the NRS described in Appendix E provided standardized questions that maintain consistency in data collection supporting reliability and validity of the study. Permission to use the data base was obtained from the study organization (Appendix A). Selection of the sample from the larger population established external validity for a study.

The Statistical Package for the Social Sciences (SPSS®) was used for data analysis improving the reliability and validity of a study by providing concrete analysis (Pallant, 2010). Increasing the total amount of information to be analyzed improved the results by giving power to the data. Power offers improved capacity to detect differences or similarities in a population (Burns & Grove, 2009). This study utilized hospice patients with a self-reported pain level of four or higher. The sample size of 134 hospice patients was established by power analysis using a confidence interval of 95%, which increases the reliability of the study. Parametric testing was used based on the level of measurement of the variable. Study reliability and validity are supported using parametric testing (Sullivan & Artino, 2013). The ability to generalize results from numeric descriptions of pain measurements provides added value to other areas of healthcare pain management programs. Measurement of the dependent variable is prone to beneficial internal validity issues, mainly because measurements are taken from the same participants over time (Privitera, 2015).

Data Collection

The Department of Elder Affairs under Florida Statutes Number 400.60501 Requires that all licensed hospice facilities in the State of Florida collect data and report information related to outcome measures (Department of Elder Affairs, 2016). These data outcomes provide the number of patients who report pain and identifies if there is a reduction in pain (OM1) (Department of Elder Affairs, 2016). The primary data collection procedure utilized all patient retrospective electronic medical records identified for admitted hospice patients through 96-hours post-admission for the timeframe of September 1st through December 30th, 2018 with a self-reported pain level on admission of four or higher on a zero to 10 numerical pain scale. All electronic medical records of patients admitted within a three-month time period was assessed to determine if the patient meets criteria for participation in the study. Electronic medical records of patients meeting criteria for participation was reviewed through 96-hours following admission to capture recorded data. Data collection focused on the narrative/historical note on visits provided by the nurse, social worker, chaplain, and music therapist related to their rapid IDG approach for identified pain. Data collection continued until the sample size established by priori power analysis had been met.

Data Analysis

Data from the patients' electronic medical record were analyzed using the Statistical Package for the Social Science-SPSS®. Data will be entered into an SPSS spread sheet using a personal computer. Data was examined for outliers, normality of variables, linearity, and homoscedasticity. Cohort statistics of central measures, variability, frequencies and percentages are used to describe the data. Multiple linear regression is used to answer the research question: Do the type and number of IDG patient care interventions predict the change in self-reported pain levels within 96-hours of admission to hospice? A multiple linear regression is appropriate to assess the relationship among a set of ordinal and interval predictor variables on an interval criterion variable. Multiple regression is an extension of simple linear regression used to predict the value of a single dependent variable from a weighted, linear combination of independent variables (Mertler & Reinhart, 2016). All independent variables (predictors) were entered concurrently into the exemplar using the enter method. Beta coefficients will be reported to determine the magnitude of likelihood for any inconsistency of the independent variable. The *F*-test was used to assess if the group of independent variables collectively predicts the dependent variable. *R*-squared was used to determine how much variance in the dependent variable can be accounted for by the set of independent variables. The assumptions of linearity, homoscedasticity and multicollinearity are addressed. (Statistics Solutions, 2013). According to Stevens (2001), values of VIF greater than ten indicate multicollinearity.

Additionally, one-way analysis of variance (ANOVA) was used to answer the following research question: Is there a difference in change in pain level within 96-hours of admission to hospice based on hospice setting? The ANOVA is appropriate to assess the differences of a continuous measure (change in self-reported pain level) between groups (hospice setting) (Tabachnick & Fidell, 2013).

Summary

The study utilized a quantitative method and a correlational retrospective design to identify the type and number of IDG interventions and to establish the relationship between these factors and the change in pain level of hospice patients during their first 96-hours in hospice care. Additionally, the study sought to determine the difference in the number and type of IDG interventions and the change in self-reported pain level based on the hospice setting. The study included convenience sampling of all patients admitted to a hospice healthcare organization serving the community of Palm Beach and Broward Counties, Florida. Data was obtained by review of patients' electronic medical records admitted with a level of four or greater self-reported pain beginning from September 1, 2018 until inclusion criteria of 134 chart reviews is met. Analysis of quantitative data determined the type and number of IDG interventions and the change in self-reported pain level within 96-hours of admission to hospice.

The study sought to determine the relationship of specific elements of the IDG approach to patient care and change in self-reported pain level as a quality measure of hospice services. Findings of the study have the potential to improve comfort and quality of life for the newly admitted hospice patient. Identification of the difference in the elements of the IDG approach to patient care based on the hospice setting may allow hospice to improve patient outcomes through improved allocation of hospice resources across settings.

Chapter 4

Analysis and Results

The purpose of the study was to identify the relationship of the factors associated with the Interdisciplinary (IDG) approach to patient care and to determine the change in the patient's self-reported pain level from hospice admission to 96-hours post admission. Objectives of the study explored the factors related to the type and number of patient interventions provided by the IDG. Identification of change in the patient's self-reported pain levels was examined for relationships-based on the type of hospice care settings of home, hospital, nursing or rehabilitation facility, assisted living facility, or hospice specific care facility.

The content of Chapter 4 describes the study data collection and analysis process reporting results. Chapter 4 includes results from the pilot study supporting the requisite for continuation of the comprehensive research to complete investigation of the factor relationships between an IDG approach to pain and the patient's self-reported pain level. Chapter 4 offers a description of the sample, and results of data analysis related to the research question.

Research Questions/Hypotheses

A retrospective electronic medical record review of hospice patients admitted to hospice care with a pain level of four or greater was implemented to investigate the questions and hypothesis relating to the Interdisciplinary group (IDG) and response to pain interventions. The following are the primary research questions and associated hypotheses for the present quantitative correlational research study:

RQ1: Do the type and number of IDG patient care interventions predict the change in self-reported pain levels within 96-hours of admission to hospice?

> H_{01}: The type and number of IDG patient care interventions do not predict the change in self-reported pain levels within 96-hours of admission to hospice?
>
> H_{A1}**:** The type and number of IDG patient care interventions do predict the change in self-reported pain levels within 96-hours of admission to hospice?

Additionally, the following sub-research question and hypotheses were addressed in the study:

RQ2: Is there a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

> H_{02}**:** There is no difference in change in pain level within 96-hours of admission to hospice based on hospice setting?
>
> H_{A2}: There is a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

Data Collection

Prior to data collection, the hospice agency's internal review board (IRB) granted permission to access the pain tool assessment data from the electronic medical records. The data collection procedure was also approved by the University of Phoenix IRB. Electronic medical records are electronically stored in the Home Care Home Base Electronic Medical Record (HCHB®-EMR) database. Electronic medical records were reviewed to determine criteria for participation in the study and the initial level of patient pain perception. Data included in the present study come from the medical records of 136 *end of life* patients at a not-for-profit hospice healthcare organization serving southern Southeastern Florida. The following data were extracted from the medical records: the type of IDG intervention, the IDG provider, and the number of interventions provided within the first 96-hours following admission for identified pain level of four or greater from admission.

Standard data collection procedures for confidentiality and anonymity were considered. All data was anonymous and confidential. The usage of data from patients' medical records poses no risk to staff or patients. Finally, all data was stored according to the agency requirements (e.g. encrypted USB storage device and secure personal computer with restricted password access). Participants were assigned random identification numbers to avoid any opportunity for subject identification.

The final retrospective chart review study included a sampling of records of patients admitted to hospice with a self-reported pain level of four or greater who received interdisciplinary interventions. Demographic intervention areas of home, inpatient, skilled nursing facilities, and contract beds were included in the study. Patient records were analyzed for pain interventions from admission to 96-hours post admission for any changes in pain level. Interdisciplinary interventions were compared to any changes in pain level related to type and amount. Data collected was categorized and consolidated using an excel spreadsheet maintaining security guidelines for references using a numbering system. A pilot study was initiated prior to initiation of the primary data collection to assess for congruency for testing measurement instruments.

Pilot Study

The pilot study required the review of 15 patient retrospective electronic records admitted to hospice with a pain level ≥ 4 to identify any logistical issues or any ambiguities relating to the proposal study. Two patient records were excluded from the 15 associated with incomplete information or early discharge of the patient prior to the 96-hour specified time limit of the study. Patient medical records of the pilot study review were primarily from female patients (53.3%) aged 68.66 years (SD 14.85), residing in their homes (66.7%) and diagnosed with cancer (64.3%).

Analysis of pain specific questions related to the study indicated a mean pain level on admission of 6.43 (SD of 1.87), and a 96-hour mean self-reported pain level of 2.5 (SD 3.57). The standard number of Interdisciplinary (IDG) interventions during the 96-hours post-admission was 3.62 (SD .65). Of the interventions completed by the IDG, interventions used to comfort the patient were: listening 60%, emotional support/prayer 45%, and 30% combined validation, spiritual support, and touch. Additional recommendations were required to capture additional data for the prospective study that included relevance to any change in pain levels related to the intervention. Documentation by the IDG resulted in ambiguities related to the re-analysis of response to pain interventions. Addition of anxiety-related pain collection was indicated and added to the study measurement tool. No logistical issues were identified.

Data Analysis

Demographical Data

The statistical analysis of demographics derived from data collection revealed a ratio of 57.4% female to 42.6% males with pain levels of four or greater on admission to hospice. The median age of the participants was 78 years-of-age with a standard deviation of 12.554. The admission area was divided into four categories: Inpatient Hospice Unit, Home, Skilled Nurse Facility, and Contract Bed. Most patients were those residing in their homes (55.9%), followed by Inpatient Hospice Unit patients (32.4%), Skilled Nursing Facilities patients (11%) and Contact Bed patients (0.7%). The following table illustrates the percentage and frequency of the hospice settings for the participants.

The sample used in the present study consisted of 136 patients (79 females, 57 males), ranging in age from 41 years old to 100 years old (*M* = 77.57, *SD* = 12.55). Participants ages were broken down into the following ranges: 1) 40 to 50 years old, 2) 51 to 60 years old, 3) 61 to 70 years old, 4) 71 to 80 years old, 5) 81 to 90 years old, and 6) 91 to 100 years old. Approximately three quarters of the participants (74.2%, n = 101) were between the ages of 61 and 90. See Table 1 for a complete description of participants' demographic information.

More than half of the participants received treatment at home (55.1%, *n* = 75). Approximately one-third of participants received treatment in Inpatient Unit(s) (33.1%, *n* = 45). Fewer participants received treatment in a Skilled Nursing Facility (11.0%, *n* = 15) or in a Contract Bed (0.7%, *n* = 1). Almost two-thirds of participants were diagnosed with Malignant Neoplasm (63.2%, *n* = 86). Fewer participants were diagnosed with cardiovascular (16.2%, *n* = 22), Neurological (11.8%, *n* = 16), Pulmonary (4.4%, *n* = 6), or other diseases (4.4%, *n* = 6). See Table 1 for a complete description of participants' demographic information.

Table 1

Demographic Characteristics

Demographic Characteristics	N	%
Gender		
Male	57	41.9
Female	79	58.1
Age Range		
40 – 50	2	1.5
51 – 60	13	9.6
61 – 70	23	16.9
71 – 80	35	25.7
81 – 90	43	31.6
91 – 100	20	14.7
Admission Area		
Home	75	55.1
Skilled Nurse Facility	15	11.0
Inpatient Unit	45	33.1
Contract Bed	1	0.7
Diagnosis		
Malignant Neoplasm	86	63.2
Cardiovascular	22	16.2
Pulmonary	6	4.4
Neurological	16	11.8
Other	6	4.4

Data related to the primary diagnosis of the participants at the time of admission to hospice were based on the following categories: Malignant Neoplasm, Cardiovascular, Pulmonary, Neurological, and other non-cancer diagnosis. Most of the participants were admitted with the diagnosis of Malignant Neoplasm, followed by Cardiovascular, Pulmonary and Neurological. Table 2 illustrates the percentage and frequencies of medical diagnosis of the participants.

Table 2

Primary Diagnosis of Patients Admitted to Hospice

Diagnosis	**Frequency**	**Percentage**
Malignant Neoplasm	86	63.2
Cardiovascular	22	16.2
Pulmonary	6	4.4
Neurological	16	11.8
Other	6	4.4

The patient care interventions were categorized according to type, resulting in four distinct types of interventions: psychosocial, spiritual, teaching/counseling, and physical interventions. Emotional support, validation, encouragement, humor, listening, and presence was categorized as psychosocial interventions. Prayer, spiritual support, life review, and music were categorized as spiritual interventions. Teaching and counseling were included as one category and touch, heat, cool were categorized as physical interventions.

The data from the patient's electronic medical records was analyzed using the Statistical Package for the Social Science (SPSS ®). First, the data was entered onto an Excel spreadsheet using generic numeric identifiers to provide anonymity for the study participant information. The data was examined for normality, outliers, homoscedasticity and linearity. Description of data included cohort statistics of central tendency measures, with observation for any variables with frequencies and percentages.

To answer the primary research question, multiple linear regression was used, treating the type and number of IDG patient care interventions as independent (predictor) variables, and changes in self-reported pain levels within 96-hours of admission to hospice as the dependent (outcome) variable. First, the assumptions of linearity, homoscedasticity and multicollinearity were addressed. This analysis was appropriate to assess the relationship of the predictor and outcome variables. The *F*-test was used to assess if both independent variables collectively predicted the dependent variable. All independent variables (predictors) were entered concurrently into the exemplar using the enter method. Beta coefficients were reported to determine the magnitude of likelihood for any inconsistency of the independent variable.

R-squared was used to determine how much variance in the dependent variable can be accounted for by the set of independent variables.

To answer the second research question, a one-way analysis of variance (ANOVA) was used to determine whether there was a difference in pain level change within 96-hours of admission to hospice based on hospice setting? The ANOVA was appropriate to assess the differences of a continuous measure (change in self-reported pain level) between groups (hospice setting).

A multiple linear regression was conducted for each of the four types of interventions to identify the relationship between the dichotomous predictor variables (intervention type and number) and the interval criterion variable, change in pain level. The assumptions of multiple regression, linearity, normality, homoscedasticity and multicollinearity, were assessed prior to conducting the analysis. Linearity assumes a straight-line relationship between the predictor variables and the criterion variable, and homoscedasticity assumes that scores are normally distributed about the regression line. Linearity and homoscedasticity were assessed by examination of the residuals scatter plot. Normality was assessed by examination of a histogram for each variable. In addition, the data was examined for multicollinearity among the variables using the Variance Inflation Factors (VIF).

Results

Descriptive Analyses. Patients self-reported their pain level at the time of admission, as well as 96-hours after admission. Change in pain level was calculated by subtracting the pain level (rated on a scale of zero – 10) 96-hours after admission from the pain level (rated on a scale of zero – 10) at the time of admission. The change in pain level score served as the dependent variable in both research questions.

At the time of admission, 136 patients reported a baseline pain level rating, ranging from 4 to 10. The average pain level at the time of admission was 6.74 (SD = 2.11). Most patients were also screened for psychological symptoms by a Social Worker (SW) (66.2%, *n* = 90) or a combination of the Social Worker (SW) and Admissions RN (30.9%, *n* = 42). Of the 136 patients, 110 reported their pain level at 96-hours. Reported pain levels ranged from zero to 10. The average pain level at 96-hours was 1.46 (SD = 2.345). Changes in pain level scores were calculated by subtracting the reported pain level at 96-hours from the reported pain level at the time of admission. Change in pain level scores ranged from -4 to 10. Negative scores indicated an increase in pain; scores of zero would indicate no change in pain; and positive numbers would indicate a decrease in pain. The average change in pain level score was 5.29 (SD = 3.084).

The two primary independent variables of interest were the type of IDG intervention and number of IDG interventions. The most frequent intervention was provided through a telephone call (34.6%, n = 47), and or followed by Inpatient Unit (IPU) visit (27.9%, n = 38), Home Visit (18.4%, n = 25), Skilled Nursing Facility (SNF) (2.9%, n = 4), and unknown (16.2%, n = 22). The number of IDG interventions per patient ranged from 2 to 8. See Table 3 for a complete description of descriptive statistics.

Table 3

Frequency and percentages of descriptive statistics

Descriptive	N	%
Pain level at admission		
4	28	20.6
5	21	15.4
6	18	13.2
7	13	9.6
8	27	19.9
9	6	4.4
10	23	16.9
Pain level at 96-hours		
0	66	48.5
1	7	5.1
2	11	8.1
3	5	3.7
4	6	4.4
5	6	4.4
6	4	2.9
7	1	0.7
8	2	1.5
9	1	0.7
10	1	0.7
Missing	26	19.1
Type of IDG intervention		
Telephone	47	34.6
IPU visit	39	27.9
Home visit	25	18.4
SNF	4	2.9
Unknown	22	16.2
Number of IDG interventions		
2	2	1.5
3	13	9.6
4	37	27.2
5	52	38.2
6	28	20.6
7	2	1.5
8	2	1.5

RQ1: Do the type and number of IDG patient care interventions predict the change in self-reported pain levels within 96-hours of admission to hospice?

In order to address this research question, a multiple regression analysis was calculated, treating type of IDG interventions and number of IDG interventions as predictors, and change in levels of pain scores as the dependent variable. The following hypotheses guided research question 1:

> H_{01}: The type and number of IDG patient care interventions do not predict the change in self-reported pain levels within 96-hours of admission to hospice?
>
> H_{A1}**:** The type and number of IDG patient care interventions do predict the change in self-reported pain levels within 96-hours of admission to hospice?

Before conducting the planned analysis, the statistical assumptions of multiple linear regression were assessed. Because the type of IDG visits were categorical in nature, to assess the relationship between the type of IDG visit and pain level, the IDG visit variable was dummy coded. The first assumption, that the relationship between the DV(s) and the IV(s) is linear, was assessed through visual analyses of scatterplots (Figure 2). It was determined that the assumption of linearity was tenable for the relationship between the number of IDG interventions and change in pain level.

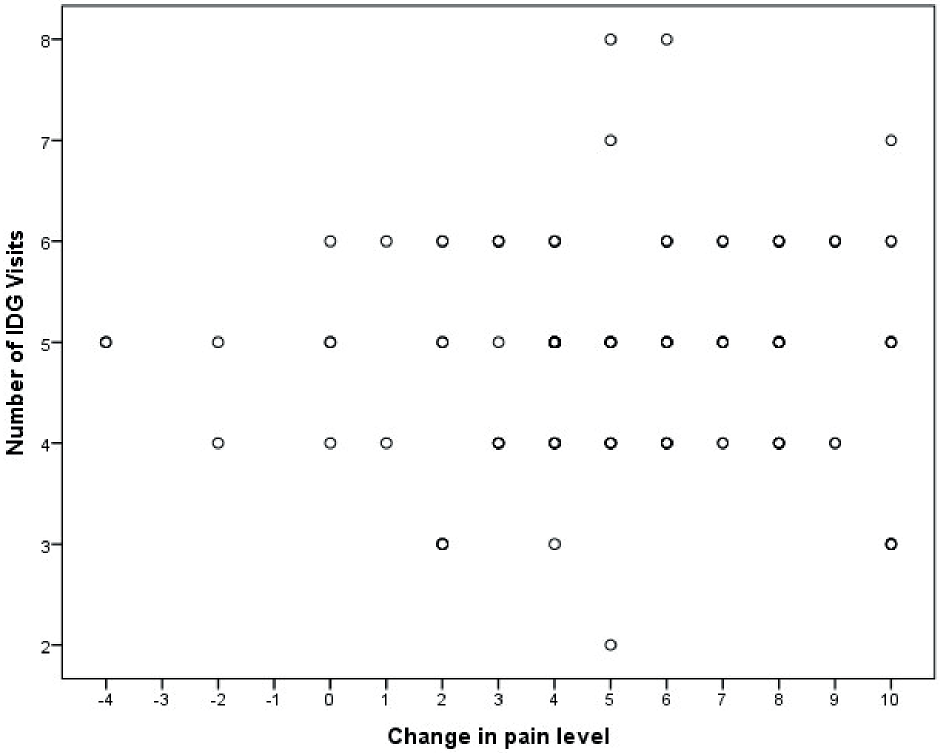

Figure 2. Scatterplot of Change in pain level and Number of IDG visits

The data were also assessed for homoscedasticity. According to this assumption, the variance of each error term should be similar across different values (e.g. high scores or low scores) of the independent variables. A standardized residual versus predicted values plot demonstrates whether data points are equally distributed across all values of the independent variable. It was determined that data from four patients differed significantly from the rest. These four patients' pain levels increased (as demonstrated by negative values in the change score). As such, these data points were treated as outliers and removed from the analysis.

The data was then assessed for multicollinearity. Each predictor in the multiple linear regression should not be strongly correlated with each other. This assumption was tested using the Variance Inflation Factor (VIF). If the VIF is less than 10, the assumption of the absence of multicollinearity was met. Treating change in pain level as the dependent variable, both independent variables had acceptable VIF (*Type of Visit (IPU):* VIF = 1.382; *Type of Visit (Home)*: VIF = 1.214; *Type of Visit (SNF)*: VIF = 1.083; *Number of IDG visits*: VIF = 1.083). As such, the assumption that the independent variables are not highly correlated was met.

After addressing the statistical assumptions of multiple linear regression, a multiple regression analysis was calculated, treating type of IDG interventions and number of IDG interventions as predictors, and change in levels of pain scores as the dependent variable. The regression equation was not statistically significant, F (4.88) = 1.494, *p* = .211. This null hypothesis finding indicates that the combined effect of type and number of visits did not significantly predict changes in patients' pain levels from the time of admission to 96-hours after admission. The combined effect of the number and type of IDG visits only accounted for approximately 6% of the variability in change of pain level (R^2 = .064).

There was no significant effect in patients' changes in pain level whether visiting patients in the IPU (t = -0.956, *p* = .342), or at home (t = -1.583, *p* = .117) compared to making a telephone call. However, changes in pain level were significantly different between SNF visits and telephone calls, t = -2.106, *p* = .038. The average SNF visit only resulted in a 2.25 change in pain level, whereas the average telephone call had a 6.22 change in pain level. However, the group sample size for SNF visits included in this analysis was small (*n* = 4), so this effect must be interpreted cautiously. See Table 4 for a complete description of the multiple regression results.

Table 4

Type and number of visits as predictors of change in pain level: Multiple Regression

Predictors	**Correlation Coefficient**	**SE**	***t***	***p***
Constant	5.870	1.309	4.485	<.001
Type of Visits				
IPU	-0.636	0.665	-0.956	.342
Home	-1.095	0.692	-1.583	.117
SNF	-3.299	1.566	-2.106	.038*
Number of Visits	0.076	0.271	0.279	.781

RQ 2: Is there a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

In order to address this research question, a one-way ANOVA was conducted, treating hospice setting as the independent variable and change in pain level after 96-hours from admission as the dependent variable. Because only one patient reported a setting in a contract bed, this category was excluded from the analysis. Furthermore, the four patients whose pain increased from admission to 96-hours were also excluded from the analysis. Therefore, the following settings were compared: 1) at home, 2) at a skilled nursing facility, and 3) and an inpatient unit. The following hypotheses guided research question 1:

> H_{02}**:** There is no difference in change in pain level within 96-hours of admission to hospice based on hospice setting?
>
> H_{A2}: There is a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

On average, patients' pain level dropped 5.58 points across all settings. The results of the one-way ANOVA yielded no significant differences in change in pain level within 96-hours of admission to hospice based on hospice setting, F(2,102) = 1.003, *p* = .370. This indicates that the average drop in pain level did not differ by setting. For hospice patients cared for at home, the average pain level dropped by 5.78 units (SD = 2.70). For hospice patients cared for in skilled nursing facilities, the average pain level dropped by 4.62 units (SD= 2.53). For hospice patients cared for in inpatient units, the average pain level dropped by 5.63. Therefore, the null hypothesis associated with research question 2 was retained. That is, there is no significant difference in change in pain level between different hospice settings.

A one-way between subjects' ANOVA was conducted to compare the effect of hospice setting on the change in pain level within 96-hours of admission to hospice. The number of patients admitted to the contract bed setting was only one and therefore was excluded from analysis. The data was assessed for normality and homogeneity of variance. Examination of the q-q plot, skewness (4.58) and kurtosis (-1.67) revealed the data was normally distributed across the types of settings. The Levine test based on the mean was not significant, p = .685, satisfying the assumption of homogeneity of variances. Results of the ANOVA found no significant effect of the independent variable, hospice setting, on the dependent variable, change in pain level, at the p<.05 level for the three types of hospice settings [F(2, 131) = 1.73, p =.181]. The ANOVA found no statistically significant difference in the mean change in pain levels for hospice patients cared for in the home (M= 4.89, SD = 3.08), the inpatient hospice unit (M= 4.60, SD = 3.18), or the skilled nursing facility (M= 5.82, SD = 2.57).

Table 5

Means and Standard Deviations of the Change in Pain Level Based on Hospice Setting

Hospice setting	*n*	*M*	*SD*
Home	74	4.89	3.08
Inpatient hospice unit	15	4.60	3.18
Skilled nursing facility	45	5.82	2.57

Table 6

One-Way Analysis of Variance of Change in Pain Level by Hospice Setting

Source	*df*	*SS*	*MS*	*F*	*p*
Between groups		29.73	14.87	1.73	.181
Within groups		1125.31	8.59		
Total		1155.05			

Chapter Summary

Chapter 4 presented statistical data to recognize if there were any relationships between factors associated between the type and number of Interdisciplinary (IDG) interventions used for the patients self-reported pain level and changes in pain level from admission to hospice and within 96-hours of admission. Investigating factors that related to the type and number of IDG interventions with any differences identified in self-reported pain score related to the care setting was investigated through additional statistical analysis. Pilot study results supported the continuation and completion of further research to analyze data for factor relationships between IDG interventions, self-reported pain levels, and care setting.

Data from 136 patients between the ages of 41 and 100 years old were collected from electronic medical records. Patients' diagnoses included malignant neoplasm, cardiovascular, pulmonary, and neurological or other diseases. All patients reported at least a level four of pain (on a scale from 1 – 10) at the time of admission. Most patients reported less pain after 96-hours than at the time of admission. Only 4 patients reported more pain after 96-hours. Furthermore, only four patients reported no change in pain level from admission to 96-hours. On average (from a scale of 1 – 10), patients pain dropped by 5.29 (SD = 3.084).

The research questions addressed the type and number of IDG patient care interventions to predict the change in self-reported pain levels within 96-hours of admission to hospice. Additional analysis was required to review if there was a difference in change in pain level within 96-hours of admission to hospice based on hospice setting. The study results showed the type and number of IDG visits did not significantly predicted changes in levels of pain from admission to 96-hours after admission. SNF visits had significantly less decrease in pain level than telephone calls. However, the limited sample size for SNF visits makes it difficult to interpret this effect. Therefore, the null hypothesis of research question 1 was retained. The type and number of IDG visits does not impact patients' change in pain level from admission to 96-hours.

Furthermore, there was no difference in change of pain level based on the hospice setting. When asked over the phone, the average pain level dropped by 5.74 units from the time of admission to 96-hours after admission. The average pain level dropped 5.46 units when asked at home, 4.00 units when asked at a skilled nursing facility, and 5.44 units when asked at an inpatient unit. Therefore, the null hypothesis pertaining to research question 2 was retained. That is, there was no difference in change of pain level between different hospice settings.

Chapter 5 presents a comparison and contrast of the study. The results relating to any existing literature, review of research questions and hypotheses, discussion of findings, limitations of the study, and recommendations are quantified. Conclusion analysis of evidence presented in Chapter 5 will discuss the findings from the data collection. Recommendations to leaders and practitioners along with future research possibilities are presented within the following chapter.

Chapter 5

Conclusions and Recommendations

The purpose and objectives of the study were to ascertain if any relationship of factors existed related to the Interdisciplinary (IDG) approach to patient care through interventions and to determine any change in the patient's self-reported pain level from hospice admission to 96-hours post admission. The objectives of the study investigated if there was a relationship between self-reported pain levels and the factors related to the type and number of patient interventions provided by the IDG. Analysis of change factors related to the patient's self-reported pain levels was examined for identification of any relationships based on the type of hospice care settings of home, hospital, nursing or rehabilitation facility, assisted living facility, or hospice-specific care facility. A reintroduction of the research question and hypotheses inclusion is reviewed.

The research results from the current study provide comparison to evidence from previous research resources. Limitations of the study in Chapter 5 identify unforeseen situations within the study that constrained the expansion of analysis for the study. Chapter 5 concludes with evidence that supports integration of the Theory of Goal Attainment in the application of interdisciplinary pain interventions for hospice patients. The self-reported pain evidence of patients experience pain supports the integration of the Theory of Goal Attainment in a hospice environment.

Research Questions/Hypotheses

As a retrospective electronic medical record review, research on hospice patients admitted to hospice care with a pain level of four or greater was actuated to investigate the questions and hypotheses relating to the Interdisciplinary group (IDG) pain interventions. The following research questions and hypothesis guided the quantitative correlational research study.

RQ1: Do the type and number of IDG patient care interventions predict the change in self-reported pain levels within 96-hours of admission to hospice?

H01: The type and number of IDG patient care interventions do not predict the change in self-reported pain levels within 96-hours of admission to hospice?

HA1**:** The type and number of IDG patient care interventions do predict the change in self-reported pain levels within 96-hours of admission to hospice?

In addition, the following sub research question and hypothesis will be addressed in the study:

RQ2: Is there a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

H02**:** There is no difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

HA2: There is a difference in change in pain level within 96-hours of admission to hospice based on hospice setting?

Discussion of Findings

Comparison and contrast of the study with existing literature provides support for applying research evidence to more diverse treatment option environments utilizing an interdisciplinary approach to pain management. Retention of the null hypotheses that the type and number of IDG patient care interventions do not predict the change in self-reported pain levels within 96-hours of admission to hospice is discussed. Furthermore, there was no difference in change in pain level within 96-hours of admission to hospice based on hospice setting. Patients' pain level improved across all hospice settings. Comparison with prior studies (Brendbekken, Harris, Ursin, Eriksen, and Tangen, 2016; Ferrell et al., 2017; Jacob, Edbrooke-Childs, Law, & Wolpert, 2017; Perez, Olivier, Rampakakis, Borod, & Shir, 2016; Petracci et al., 2016; Rash et al., 2018) on the hospice pain experience indicate a correlation to the findings from this study by supporting the identification of improvements in pain level after completion of IDG interventions. Perez, Olivier, Rampakakis, Borod, &Shir, (2016) study on the pain and IDG interventions for managing hospice patient pain demonstrates congruency with the current study by demonstrating a comparable reduction on pain scores after IDG pharmacological and non-pharmacological interventions.

No Improvement with Type and Number of Interventions.

The current study evidence reveals that the type and number of IDG interventions provided to the patient on hospice do not predict changes in self-reported pain levels. Previous research supported a multimodal and interdisciplinary approach to providing pharmacological and non-pharmacological interventions for rapid pain management (Dobbs et al., 2014). The current study did not examine which types and number of interdisciplinary interventions were most effective in relieving self-reported pain in the hospice environment. A multidisciplinary study on an integrative treatment group for low back pain by Wayne et al. (2018), used observation of counseling, massage, coaching, and acupuncture/chiropractic interventions over a 12-month timeframe to analyze for self-reported pain score changes. Though meaningful significant differences in scoring from zero to 10 indicated pain improvements, the specific type of intervention was not associated with characteristics related to the improved pain scores. Contrast of the Wayne et al. (2018) study to the type and number of interventions of the current study establishes a correlational improvement difference between self-reported pain scores and interventions. Comparison of the current study with an analgesic reduction with interdisciplinary pain management study by Guilford, Daly-Eichenhardt, Hill, Sanderson, and McCracken (2018) found sustained improvements in pain scores with the application of interdisciplinary treatments such as cognitive behavior and physical activity to improve pain scores. The current study did not investigate comparison with decreased in analgesic use and non-pharmacological interventions; however, a decrease in self-reported pain scores was evident.

Significant Change in Pain Level with 96-hours of Admission.

Analysis of data regarding a change in pain level within 96-hours of admission related to the hospice setting indicates significant differences in pain level response. The greatest improvement within 96-hours of admission is within the Hospice Inpatient Unit. Nurses are available 24-hours, days a week with a physician easily accessible, and social worker (SW) and chaplain (CH) available within 24-hours if needed. Comparison of the current study with an interdisciplinary pain management program for establishing self-reported pain improvements results by Rash et al. (2018) identifies similar improvement in self-reported pain scores through rapid response. Relating the reduction in pain scores of a controlled environment such as an inpatient hospice unit to an emergency department suggests an associative relationship. Self-reported pain that is rapidly treated with pharmacological and non-pharmacological interventions improves the pain level response for hospice patients.

Limitations

The study was focused on retrospective data collection from electronic medical records. This form of research presents limitations in analysis options. Constraints to the analysis included the research of types and numbers of interdisciplinary interventions provided to patients with a self-reported pain level reported at a four or greater. Since this was not a controlled study that would allow for grouping specific to type and number of interventions provided by the interdisciplinary group for observation, a simple or multi-linear regression could not be completed. The grouping of interventions within the patient's medical record narrative documentation did not allow for individual comparison with intervention results related to the intervention.

The medical record was not designed to include specific questions related to the number and type of intervention provided for pain management. The limitation of documentation required exploring multiple areas of each patient's medical record to identify specific data on the number and type of interventions provided by the interdisciplinary group for analysis. The unanticipated extended time required to obtain additional security access to reports from the medical record entry system delayed collection of data for analysis.

Recommendations to Leaders and Practitioners

Primary results of the study indicate that the area of treatment options best suited to improve pain response within 96-hours of admission is the Hospice inpatient-unit. Though 90% of hospice patients choose to receive treatment for their pain and symptoms in their home (Brumley, Enguidanos, & Jamison, 2007), this study shows that pain is controlled more rapidly and effectively in a controlled hospice inpatient unit. Consideration of encouraging a short inpatient unit stay to control pain symptoms utilizing the interdisciplinary group interventions would benefit the patient in stabilizing pain to return home. The cost of transferring the patient from one modality to another is included in the daily reimbursement rate set by Medicare. Though the nurse may make a recommendation to the physician to transfer a patient to an inpatient unit for intensive symptom management, it is ultimately the physician who renders the final decision. This offers educational opportunity to staff, caregivers and families while supporting patient autonomy in attaining their goal of care for comfort.

A comparison study of patients in home and inpatient units who receive higher levels of opioids offers the possibility of identifying differences in treatments provided to hospice patients. A study by Sager and Childers (2019) identified conversational challenges when providing nonmedical opioid interventions for severe anxiety or insomnia. The bias and cultural stigma associated with the use of opioids for comfort measures prohibits the prescriber's ability to treat pain effectively. Establishing the comfort and knowledge level that staff and family caregivers experience when medicating at an optimal level to reduce pain could provide opportunity to offer additional resources and educational enhancement opportunities. The identification of barriers for the use of opioids to treat pain and symptoms could improve satisfaction with end of life care.

A recommendation to leaders is to consider standardization of documentation within the electronic medical record to include the types and number of interventions provided with identification of pain levels before and after treatment. This may support evidence-based practice for the effectiveness of pain management provided by the interdisciplinary group to patients who experience pain and symptoms related to pain.

The electronic record should also include the patient’s preferences for pharmacological and non-pharmacological interventions. The review of records indicated that inclusion of such preferences was not a standard question within the electronic medical record documentation. The Theory of Goal Attainment (King, 1981), establishes the assumption that the patient has control of the environment and situation to meet their needs. Establishing the agreed upon goals of care for pain is an important part of utilizing this theoretical framework of care for the patient. Providing the patient with the choice of intervention(s) to relieve pain would increase autonomy and promote goal attainment in the improvement end of life pain management decisions.

Recommendations for Future Research

A quasi-experimental study would be recommended for future research related to the analysis of predicting change in pain for types and number of interventions used for pain management. A non-randomized pre-post design study could provide scientific evidence for the impact of IDG interventions for pain for practitioners to apply change in their pain management practice. The quasi-experimental design would require consent and additional review board approval; however, the benefit of research data would outweigh the added risk prevention requirements. This research design would allow for more extensive data testing including regression analysis.

A recommendation for future research would include reviewing results of patients who are admitted to a hospice inpatient unit for treatment of pain, data analysis of 48-hour pain, and follow-up on the effect of pain control post-release from the inpatient unit to home. This study could be completed using a retrospective chart review or a quasi-experimental design. Establishing the effectiveness for prolonged control of pain is an important consideration on the effectiveness of an interdisciplinary interventional treatment plan. A recommendation for comparison of pharmacological treatments with non-pharmacological interventions may offer results that impact the current and future treatment of pain for hospice patients.

Patient satisfaction is an indicator of a positive hospice experience. A recommendation to complete a quantitative study on perception of the effect of interdisciplinary pain interventions could add to the body of knowledge for management of pain and related symptoms in a hospice setting. Using a questionnaire-based study could provide questions related to perceptions of achieving control in pain management through interdisciplinary interventions.

Summary

Chapter five reviewed the purpose and objectives of the study for a prediction in change factors relating to the Interdisciplinary (IDG) interventions for patient self-reported pain within 96-hours of admission to hospice. Issues researched were if the type and number of interventions predicted a change in pain levels and if the setting for pain care affected the pain outcome for the patient. Change elements were researched for any relationships between the type of hospice care settings of home, hospital, nursing or rehabilitation facility, assisted living facility, or hospice specific care facility.

Research questions addressed were if the type and number of IDG patient care interventions predict the change in self-reported pain levels within 96-hours of admission to hospice, and if there is there a difference in change in pain level within 96-hours of admission to hospice based on hospice setting. The null hypotheses was retained for RQ1: Do the type and number of IDG patient care interventions predict the change in self-reported pain levels within 96-hours of admission to hospice? While the results found that the type and number of IDG patient care interventions did not predict a change in self-reported pain levels and that the change in pain levels did not differ based on the setting, the pain level improved for all patients regardless of the hospice setting.

This study enhances the body of research knowledge for hospice care by encouraging creation of evidence-based practice standards of care in the treatment of pain though interdisciplinary interventions. Changing current documentation practice encourages improvement in documentation standards by providing evidence supporting interdisciplinary interventions for pain interventions improve patient self-reported pain levels. It is important for the interdisciplinary group to consider the patients preferences in developing the best management of pain and symptoms. Collaborative effort between patient and the interdisciplinary group provides opportunity to support effective pain management through application of evidence that contributes to beneficial palliative and hospice care practice. This endeavor promotes patient autonomy while embracing the Theory for Goal Attainment in managing interdisciplinary pain strategies for the comfort of patients on hospice.

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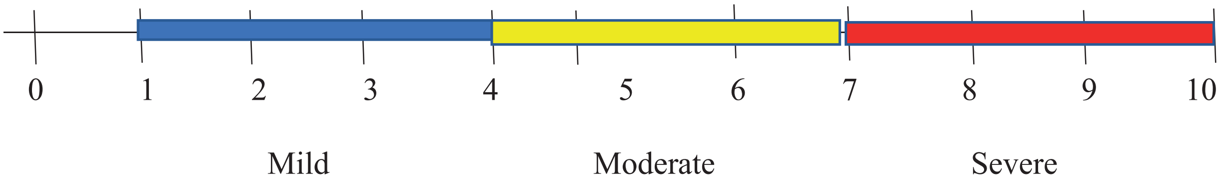
Appendix A

Measurement Tools

Measurement Tools Home Care Home Base ® (HCHB) (PQRST) documentation, questions: provocation/palliation, quality/quantity, region/radiation, severity, and timing. Permission granted by Trustbridge- Dr. Gonzalez, medical director and senior administrator for Home Care Home Base ® electronic medical record system 2019. Additional assessment tool from HCHB following initial assessment for the rating of pain on a zero to 10 scale that verifies the severity of pain and effect of interventions.

Descriptors	Selections (Single or Multi-select)
CHARACTER OF PAIN:	DULL, THROBBING, SHARP, HEAVY, STABBING, BURNING, CRAMPNG, OTHER (DESCRIBE)
FREQUENCY OF PAIN:	OCCASIONAL, FREQUENT, CONSISTENT, WITH MOVEMENT, AT REST
"HOW LONG DOES THE PAIN LAST?"	DESCRIBE
PAIN RELIEVED BY:	DESCRIBE
PAIN MADE WORSE BY:	DESCRIBE
HAS PAIN HAD ANY EFFECT ON FUNCTION OF QUALITY OF LIFE?	YES- DESCRIBE NO
IDENTIFY THE PAIN MEDICATION(S) AND NUMBER OF PRN DOSES USED OVER THE PAST 24-HOURS:	DESCRIBE



Appendix B

Demographics

Patient ID	Age	Sex	Admission Area H Home IPU Inpatient Hospice Unit SNF Skilled Nursing Facility CB Contract Bed Hospital
1			
2			
3			
Etc.			

Appendix C

Guide for Chart Review at Admission and 96-hours Post Admission

	Expectations of Documentation	Evidence in HCHB Narrative Documentation	Provider and Time		Provide and Time		Provider and Time		Provider and Time	
Comprehensive Assessment	Prognosis of 6 months or less	**Yes or No**								
	Functional Assessment	**Yes or No**								
	Psychological Symptoms	**Yes or No**								
	Social Concerns	**Yes or No**								
	Spiritual Concerns	**Yes or No**								
	Physical Symptoms Related to Pain	**Yes or No**								
Screening for Physical Pain Related Symptoms	Pain Level #									
	Dyspnea	**Yes or No**								
	Nausea	**Yes or No**								
	Constipation	**Yes or No**								
	Anxiety	**Yes or No**								
Emotional/Spiritual Or Psychological(PS) Needs	Discussion of PS/spiritual/ religious concerns or documentation that the patient/caregiver/family did not want to discuss	**Yes or No**								
Treatment Preferences and Care Consistency	Discussed Pain Treatment Preference	**Yes or No**								
	Specific treatment preference									
	Treatment preferences followed	**Yes or No**								
Care Planning	IDG Meeting	**Yes or No**								
	Communication between IDG members documented on pain	**Yes or No**								
	POC open addressing pain	**Yes or No**								
Measures to Enhance Pain Related Comfort	Interventions to reduce pain.	**Yes or No**								
	Interventions to promote relaxation	**Yes or No**								
	Interventions to reduce anxiety	**Yes or No**								

Pain Medication Intervention	**Type of Medication**	**Pain Level Before/After Medication**		**At Admission**		**96-hours Post Admission**	
Yes or No							
Yes or No							

Appendix D

Approval for Kings Theory of Goal Attainment Use

Approval for Fair Use adaptation of Kings Conceptual Model: Theory of Goal Attainment, and transaction process in the 21st century. Granted by: permissions@sagepub.com 11/2016.

Appendix E

Comprehensive Pain Assessment Questions

Medicare Required Hospice (HOS) Questions required for completion of comprehensive pain assessment in Home Care Home Base ® (HCHB)

Pain Assessment:

Questions	Selections (Single or Multi-select)
HOS085 PATIENT RESPONSE: "ARE YOU UNCOMFORTABLE BECAUSE OF PAIN?"	YES NO UNABLE TO RESPOND
TYPE OF SCALE USED TO ASSESS PAIN:	NUMERIC SCALE VISUAL PAIN SCALE VERBAL DESCRIPTOR SCALE RATE PAIN WITHOUT STANDARDIZED TOOL
HOS089 PAIN SCORE (0-10):	0-10
HOS091 PATIENT REPORTED GOAL PAIN SCORE (0-10)	0-10