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Chronic Low Back Pain- A Needs Assessment for Practice Change

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This is to certify that the doctoral study by

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2017

Abstract

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MS, Excelsior College, 2013

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

There is a practice gap in the self-management education of patients with chronic low back pain. Insufficient self-management leads to increased frequency of flare-ups of low back pain, disability, loss of productivity, and increased cost of health care. The guiding practice-focused question was focused on the unmet self-management support needs of the chronic low back pain patients in a Midwestern state local pain clinic. The purpose of this descriptive cross-sectional study was to ascertain the unmet needs of patients' self-management support by analyzing the results of a patient study performed by this clinic. The theoretical principles of the model for evidence-based practice change, the chronic care model, and the middle-range theory of self-care of chronic illness were used. The evidence included the analysis of the Patient Assessment of Chronic Illness Care Survey (PACIC) data from 100 patients treated in this pain clinic. The clinic used the PACIC questionnaire to collect data from its 100 chronic low back pain patients, selected by simple random sampling method. The average weighted scores of these patients' responses were below the norm on all PACIC subscales and summary scores. According to study results, this pain clinic did not meet the self-management support needs of its chronic low back pain patients. Evidence-based recommendations were made for the improvement in the medical model of patient care by including nurse-led patient education and support. The positive social change is the improvement in the health status of this growing health population by meeting their identified education and support needs. Positive results from this nurse-led intervention could lead to the dissemination and widespread implementation of these recommendations in other pain clinics.

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Dedication

This dissertation is dedicated to my parents.

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Acknowledgments

I wish to thank everybody that made this project a success, including all the faculty members at the Walden University and most especially the DNP project mentoring crew, and the team at my practicum site here, in Ohio.

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Section 1: Overview of the Project

Introduction

According to the Institute of Medicine (IOM, 2011), about 100million people in the United States suffer from chronic pain. The annual U.S. health care expenditure from chronic pain management is estimated at about 635 billion dollars (IOM, 2011). The prevention or reduction of the number of episodes of acute exacerbation of chronic pain can enhance the quality of life and lower health care costs (IOM, 2011).

It is estimated that employers spend 7.4 billion dollars a year on their employees aged 40 to 65 years old due to back pain (The American Academy of Pain Medicine, n.d.). Patients with chronic low back pain constitute about 5% of all patients with back pain and account for over 75% of the cost of low back pain management (National Institute of Arthritis and Musculoskeletal and Skin Diseases [NIAMSD], 2006; Patrick, Emanski, & Knaub, 2014). This 5% constitutes the bulk of patients seen in the pain clinics. Measures taken to decrease morbidity and disability in these patients can increase their quality of life, lower the cost of care, and enhance productivity.

Behavioral modification programs increase self-efficacy in the self-management measures for chronic low back pain and decrease the acute exacerbations of chronic low back pain (Benjaminsson, Biguet, Arvidsson, & Nilsson-Wikmar, 2007; Harman, MacRae, Vallis, & Bassett, 2014; Heapy et al., 2016; van Hooff et al., 2010). Moreover, programs that include self-management protocols have led to better pain control (Bair et al., 2009; Harman et al., 2014; Hooten et al., 2013; van Hooff et al., 2010).

The practice problem addressed in the evidence-based project (EBP) related to the inadequate support for chronic low back pain self-management in a local pain clinic. Ineffective, chronic, low back self-management predisposes to flare-ups of chronic low back pain (CLBP), increased disability, loss of productivity, and increased cost of health care. This doctoral project was a quality improvement initiative aimed at improving the care of chronic low back pain patients attending a pain management center in Ohio. In the project, I evaluated the results of a patient survey conducted by the clinic to inform the stakeholders about the patients' perception of their educational and self-management support needs. The positive social change potential for this doctoral project is the design of a program intended to reduce disability due to chronic low back pain and the associated improvement in the quality of life, increased productivity, and savings in health care cost.

Background

CLBP is a population public health problem because of the associated disability that results in loss of days at work and loss of income (Andersson, 1999). The National Ambulatory Medical Care Survey (NAMCS) ranked low back pain among the top 20 reasons for physician office visits (as cited in National Center for Health Statistics [NCHS], 2014). CLBP is the second leading cause of disability and the most common reason for lost workdays in the United States (Freburger et al., 2009). It accounts for the loss of about 149 million workdays per year and costs about $100 to $200 billion annually (Freburger et al., 2009).

There are various definitions of CLBP (Andersson, 1999). It has been defined as back pain located at the lower back, lasting over 7 to 12 weeks (Andersson, 1999). CLBP has also been referred to as back pain lasting over the period that the healing process is expected. Chronic pain may have nonspecific etiological pathologies (Andersson, 1999). The natural history of recurrent back pain seen in patients with CLBP has led to its definition as a recurrent back pain (Andersson, 1999).

CLBP has varied etiology, but the most common cause of CLBP is acute low back pain that results from mechanical damage to the normal anatomical structure of the back, due to the poor posture of sedentary lifestyle (Cleveland Clinic, n.d.). It could also result from damage due to overweight and occupations that require lifting and bending (Cleveland Clinic, n.d.). CLBP is an end stage disease of the spine in which all various etiological factors invariably lead to chronic disabling pain. The lifetime prevalence rate in the United States is about 80% (Cleveland Clinic, n.d.). The 1-year prevalence rate, or the percentage of the population with chronic back pain in every given year, is about 15-20%. The highest prevalence is in the 45 to 64 age group (Cleveland Clinic, n.d.).

The pain management centers are in a position to launch chronic low back prevention programs, as well as implement programs to decrease or eliminate disability in patients with established diagnosis of chronic low back pain. A universal clinic-based program that seeks to eliminate or decrease the disability due to chronic low back pain through patient empowerment on self-management measures can have a significant economic impact.

The trend in the management of chronic disease is the employment of strategies that eliminate or decrease the frequency of costly episodes of acute manifestations of chronic illness through coordinated care (Coleman, Austin, Brach, & Wagner, 2009). This strategy of controlling the cost of chronic disease management is based on the Pareto principle (Nash, Fabius, Skoufalos, Clarke, & Horowitz, 2016). According to the Pareto principle, if events are quantified according to their effects and causes, 80% of effects are only due to 20% of causes. When the Pareto principle is applied to house ownership, 20% of the richest people will own 80% of the properties in the city (Nash et al., 2016). The Pareto principle applies to health care, especially in the arena of health care quality and health care costs to the nation (Nash et al., 2016). In keeping with the Pareto principle, 80% of the national health care expenses are due to the sick 20% of the population (Nash et al., 2016). In 2009, 5% of the U.S. population accounted for about 50% of the national health care expenditure (Nash et al., 2016). This 80-20 maxim is helpful in the organization, structuring, and financing of health care in the United States (Nash et al., 2016). Because a small proportion of the population is responsible for a large chunk of the health care expenditure, the use of chronic disease management strategies that will enhance the quality of care and decrease cost is imperative. Patients with chronic low back pain constitute about 5% of all patients with back pain and account for over 75% of the cost of low back pain management (NIAMSD, 2006; Patrick et al., 2014). This 5% constitutes the bulk of patients seen in the pain clinics (NIAMSD, 2006; Patrick et al., 2014). Chronic disease management strategies implemented at the level of pain management clinics will have a significant effect in decreasing the cost and disability due to chronic low back pain. Self-management support, a fundamental element of the chronic care model (CCM) strategy for chronic disease conditions, is vital in the management of patients with chronic low back pain (Kawi, 2014).

Problem Statement

This pain management center has counseling services dedicated to its addiction clinic. It does not have separate counseling service for chronic pain management. Chronic pain patients' counseling is done during their brief clinical encounters with providers. There are barriers to clinical, encounter-based counseling that includes inadequate time, no proper training in counseling, inadequate reimbursement, and doubts about the efficacy of health behavior change interventions (American College of Preventive Medicine [ACPM], 2017). In this pain center, the nursing role is restricted to the assessment of new patients, neglecting the patient education and counseling role. However, nurses play a role in patient education and counseling (ACPM, 2017; Loxton, 2003). Nurses' patient teaching and counseling responsibility is rooted in the nurses' role in chronic illness care (ACPM, 2017). The CCM on which the management of chronic disease conditions is based requires the use of nurses, and other nonphysician staff, to provide patient education and counseling on chronic disease self-management tasks (ACPM, 2017). In this practice environment, there is a potential risk for high frequency of flare-ups of chronic low back pain, triggering a cascade of disruptive events, such as high frequency of emergency room visits, unscheduled office visits, phone call requests for adjustment in medication, interference with the facility workflow, and the decrease in the facility's returns on investment. Requests for insurance prior authorization for invasive, nonpharmacological interventions for chronic low back pain require the documentation of trial of self-management measures. The risk for high frequency of acute exacerbation of chronic low back pain may be attributable to the quality of the clinical, encounter-based counseling on self-management of chronic low back pain. This clinic identified the need for additional information from clients about their perception of their education and self-management needs.

Purpose

The aim of this doctoral project was to evaluate the findings of a survey of patients regarding the patient education and counseling program and to make recommendations for improvement. Inadequate support for CLBP self-management (SM) may be responsible for cases of nonadherence to treatment, evidenced by noncompliant urine drug screen in this practice setting. There is a high rate of acute exacerbation of CLBP in association with emergency room visits among patients who receive treatment in pain centers (Bennett, Simon, Brennan, & Shoemaker, 2007). This is possible in this practice setting.

These factors may be attributable to the clinical, encounter-based patient education and counseling program in this practice setting that may not provide adequate support for CLBP self-management. Moreover, the nursing staff is not involved in patient education and counseling, the practical skill they know how to do best (ACPM, 2017’ Loxton, 2003). The gap-in-practice that I addressed was the clinical encounter-based patient education and counseling that lacked adequate support for self-management of CLBP.

The guiding practice-focused question was the following: What are the unmet self-management support needs of the chronic low back pain patients in a Midwestern state local pain clinic?

The purpose of this doctoral project was to identify patient perceptions regarding their own needs for self-management of CLBP through analysis of a survey completed by patients and to make recommendations for improvement. The dissemination of this information may improve pain management at this pain clinic, and recommendations may also improve practice in other pain management centers, potentially impacting the cost and disability due to chronic low back pain. This could be done through the pain management specialty practice group of the American Association of Nurse Practitioners (n.d.).

Nature of the Doctoral Project

This doctoral project was a quality improvement initiative aimed at improving the care of CLBP patients attending a pain management center in a Midwestern state. It entailed the ascertainment of the self-management support needs of CLBP patients attending this pain center, followed by evidence-based recommendations for improvement. Behavioral modification programs enhance self-efficacy in the adoption self-management measures for CLBP, with the resultant reduction of CLBP acute exacerbations (Benjaminsson et al., 2007; Harman et al., 2014; Heapy et al., 2016; van Hooff et al., 2010). Programs that include self-management protocols have led to better pain control (Bair et al., 2009; Harman et al., 2014; Hooten et al., 2013; van Hooff et al., 2010). Researchers have shown that counseling on self-care management measures leads to improvement in function and a reduction in the frequency of acute exacerbations of CLBP (Du et al., 2017; Krein, Bohnert, Kim, Harris, & Richardson, 2016; May 2010; Taha, Mohamed, & Abd El-Aziz, 2015).

The CLBP patients attending the pain management clinic were the source of evidence. The data collected were expected to reflect the patients' perception of the extent to which this clinic met the self-management support needs of patient with CLBP. The Patient Assessment of Chronic Illness Care (PACIC) survey was used to collect data from CLBP patients regarding how this pain clinic supported their self-management needs. The CLBP patients filled out this survey to assess how well this pain clinic has met their self-management needs in five domains of care.

Significance

This evidence-based change initiative was aimed at improving the efficacy of the clinical, encounter-based patient education and counseling in an Ohio pain management center, with the ultimate goal of decreasing the cost and disability due to CLBP. The importance of this evidence-based initiative relates to the various interest groups and the effects it has on them, its potential impacts on nursing practice, the prospects for its use in other practices, and its positive effects on the society.

The Stakeholders

The stakeholders in this evidence-based, practice change initiative are the patients, the physicians, the nurse practitioners, nurses, medical assistants, and counselors. It was the nurse practitioners who identified this gap in nursing care and started with the use of a patient survey to validate that the patients themselves noted education and support needs and might be receptive to the additional care.

Although CLBP patients constituted about 5% of the population of low back pain patients, they accounted for the majority of patients seen in the pain management clinics, including this pain clinic (NIAMSD, 2006; Patrick, Emanski, & Knaub, 2014). The majority of patients seen in this pain clinic are between the 3rd and 6th decades of life and include the most productive members of the society (Patrick et al., 2014). CLBP is the second leading cause of disability and the most common reason for lost workdays in the United States (Freburger et al., 2009). It accounts for the loss of about 149 million workdays per year and costs about $100 to $200 billion annually (Freburger et al., 2009). A multimodal approach that includes pharmacological and nonpharmacological treatment measures is recommended for the management of CLBP (Patrick et al., 2014). The anticipated long-term outcomes of this quality improvement project are a decrease in disability, improvement in the quality of life, and the reduction in the health care cost and economic loss due to CLBP. Also, a program that supports self-management of CLBP is expected to lead to a decrease in the demand for opioid therapy. Due to the high incidence of overdose deaths from prescription opioids, the sole use of opioids in the treatment of chronic pain is being de-emphasized (Alford, 2016; Centers for Disease Control and Prevention, 2016; Chang, Fillingim, Hurley, & Schmidt, 2015; Ohio Department of Health, 2017). With the recent push for health care reforms, machinery is set to decrease funding for opioid addiction therapy, while clamping down on over prescription of opioids for pain management (Santhanam, 2017). The U.S. administration is working on a new health care bill that will cap the Medicaid coverage for low-income residents, and impact the coverage of opioid addiction therapy (Firger, 2017). If passed, there will be a new executive order aimed at tackling the opioid epidemic, which includes the reduction in prescription opioids through the state prescription drug monitoring programs (Santhanam, 2017). This reinforces the importance of nonmedicine treatment through the support for self-management offered during patient education and counseling (Chang et al., 2015). The patient representatives in this pain management center will be involved in the planning, design, implementation, evaluation, and dissemination of this project that deals with how they can be partners in managing their CLBP.

The physicians and nonphysician providers (nurse practitioners and physician assistants) have been the focus of attention in the recent moves to stop the prescription opioid overdose epidemic (Apel, 2017; Breining, 2017; Centers for Disease Control and Prevention, 2014, 2016; DuPont, n.d.; National Institute on Drug Abuse [NIDA], 2017; Oaklander, 2017). In the United States, it is estimated that the economic cost of prescription opioid misuse is about 78.5 billion dollars a year (NIDA, 2017). In 2015, opioid overdose due to prescription opioid, heroin, and illicit fentanyl accounted for more than 33000 deaths in the United States (NIDA, 2017). Also, about 2 million people living in the United States suffered substance abuse disorders from prescription opioid pain medications in 2015 ((NIDA, 2017). All patients seen in this pain clinic have chronic pain. The NIDA (2017) showed that about 21 to 29% of chronic pain patients who are prescribed opioids misuse them, and roughly 12% of them develop opioid use disorder. The prescription opioid was a predisposing factor in 80% of heroin users (NIDA, 2017).

Nurse practitioners and physicians have been charged, and some have lost their licenses, for prescription opioid-related infractions (Apel, 2017; PennLive, 2017; Sullivan, 2017; Wootson, 2017). The health care providers (physicians, nurse practitioners, and physician assistants) develop and adopt ways of decreasing the number of opioid prescriptions written for the management of CLBP. The self-management support initiative will enhance the self-efficacy of CLBP patients in managing their chronic pain and decrease their need for prescription opioids. Hence, health care providers will be involved in the planning, design, implementation, evaluation, and dissemination of this project.

The other members of clinical staff, the medical assistants, the licensed practical nurses, counselors, and laboratory technologists are team members whose roles in the implementation of this initiative should not be neglected. The medical assistants and licensed practical nurses assisted patients in the completion of the assessment forms, especially those who are physically impaired. The nursing staff will be involved in patient teaching when the recommendations for improvements are made. The expert services of the counselors are harnessed to attend to patients suspected of opioid use disorder. The laboratory technologist will periodically update the services about trends based on their observations of urine drug screens in patients with CLBP.

This pain center is a for-profit small health organization with the mission of attaining excellence in pain management, through the provision of quality health care service to its patients. Its sustainability is contingent on its ability to generate revenue through excellence in pain management. An efficient self-management support program for CLBP decreases the disruption of workflow that arises from incessant phone calls, unscheduled office visits, and stretching of limited human resources. It enables the organization to focus on the high yield revenue generating procedures needed for its sustenance and relevance in the competitive pain management specialty in the region.

Potential Contributions to Nursing Practice

This project has the potential to improve nursing practice, as nurses are vulnerable to back injuries that predispose to CLBP (American Nurses Association [ANA], n.d.). The high frequency of back injuries associated with the nursing workforce is attributable to patient handling maneuvers that are part of nursing care (ANA, n.d.). Regardless of the various assistive devices for patient lifting and repositioning, many nurses sustain repeated back injuries and acute back pain, which progress to CLBP. The registered nurses rank sixth on the United States Bureau of Labor's list of occupations at risk of musculoskeletal sprains and strains (as cited in ANA, n.d.). The subset of nursing workforce mostly affected by low back pain is the nursing assistants. The nursing assistants are amongst the first ranking workers on the U.S. Bureau of Labor's list of occupations at risk of occupational back injuries (as cited in ANA, n.d.). The 2006 Bureau of Labor Statistics revealed that "nursing assistants, orderlies, and attendants" were absent from work for 49, 480 days accounting for a frequency of 526 per 10, 000 workers (as cited in Wilson et al., 2011). The high frequency of absenteeism is because of back injuries resulting from manual lifting and moving activities associated with job tasks of nursing assistants (Wilson et al., 2011).

The implementation of an intervention that incorporates the nursing patient teaching and counseling skills, and its outcomes, have implications for nurses and nurse practitioners. The lessons learned from this project could be integrated into efforts aimed at preventing and decreasing disability in nurses with CLBP. Concerning the second recommendation of the IOM's (2010) Future of Nursing Report, this initiative is an opportunity for nurses to lead in the collaborative effort to decrease disability, the cost of care, and improve the quality of life of patients with CLBP.

CLBP fits into the chronic disease conditions amenable to primary care services. Nurse practitioners are primary care providers (Cassidy, 2013). Primary care covers a range of services that include continuing care of chronic disease conditions (Cassidy, 2013). Under the auspices of primary care, guided by the principles of the CCMs and nurse-led clinics, this project offers the opportunity for nurse practitioners and nurses to provide education and counseling on chronic disease self-management tasks to patients with CLBP (ACPM, 2017).

Potential for Transferability

The integration of patient education and counseling on self-management of CLBP into the everyday pain clinic encounters has potential for dissemination to other pain clinics. Patient education and counseling ensure that patients are engaging in the appropriate self-management tasks, including taking their medication as prescribed to prevent overdose deaths. Other practice areas may become involved through two mechanisms. The first is through the patient satisfaction surveys of the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) survey, which this practice change project enhances (Agency for Healthcare Research and Quality [AHRQ], 2016). The second is through presentation to the pain management Specialty Practice Group of the American Association of Nurse Practitioner (American Association of Nurse Practitioners, n.d.). The pain management, specialty practice group is membered by nurse practitioners in other pain clinics across the nation (AANP, n.d.). Sharing the positive outcomes of this project is one way of disseminating this practice change initiative to similar practice areas.

Potential Implications for Positive Social Change

Social change may be defined as the alteration of the social structures or institutions of society, such as the culture (especially family, religion, and traditions), government, schools, and the health care delivery system (Leicht, 2013; Shah, n.d.). Social change is not stagnant (Shah, n.d.). Social change is in a constant flux and may contribute to the common good of the society, known as the positive change (Shah, n.d.). Adverse social change manifests as disruptions in social structures and institutions that may be due to adversities, that commonly result from disasters (natural or human-made – wars and political instability).

The CCM underpins the potential for positive social change arising from the dissemination of this change initiative. In the CCM, community resources and policies, and an organized health care delivery system (that includes decision support and clinical information system), provide self-management support. The enhancement of self-management support for CLBP through the implementation of the recommendations for the efficient use of community resources and policies will lead to a positive social change in the management of CLBP. In the pursuit of positive social change, the long-term goal of my DNP project was to achieve excellence in CLBP self-management. This will impact the Health people 2020 objective of decreasing the disability or activity limitation due to back pain at the aggregate level, by 10% by the year 2020 (Office of Disease Prevention and Health Promotion [ODPHP], 2016).

Summary

This pain center is a for-profit, small health organization with the mission of attaining excellence in pain management. As it is one of the top pain management centers in the city, it strives to gain a competitive edge through the concept of knowledge integration. It is expected that this organization will be in search for products and services that will put it at a vantage position. CLBP is a clinical condition that is most commonly encountered in this pain center. Knowing what services will improve the treatment outcomes of this target patient population will give it a competitive edge. Self-management of chronic disease conditions improves patient outcomes and decreases the cost of care. The knowledge of the deficiencies in the self-management support for patients with CLBP patients in this center will help in improving this facility's services.

The purpose of this doctoral project was to identify the patients’ perception regarding this facility’s support for self-management of CLBP and to make recommendations for improvement. Implementation of the recommendations is expected to improve the efficacy of the clinical, encounter-based patient education and counseling on self-management of CLBP, in this Ohio pain management center, and potentially at the aggregate level. The goal is to decrease the disability and cost due to CLBP.

In the next section, the concepts, models, and theories that underpin this doctoral project are discussed**.** Supplementary information on the relevance of this initiative to nursing practice is given. The local background and context in which this project took place are described. I was the sole investigator in this research initiative. I was working under the direct supervision of my preceptor.

Section 2: Background and Context

Introduction

This pain center is one of the top pain centers in a metropolitan setting in Ohio. In a city with many pain management clinics, one of the goals of each pain clinic or center is to remain relevant through excellence in the services it provides to the community it serves. CLBP is the most commonly encountered chronic clinical condition in all of the pain management clinics in the city. Self-management of chronic disease conditions improves patient outcomes and decreases the cost of care. The enhancement of self-management of CLBP through improvements in the patient education and counseling services is desirable. Nurses believe that there is a deficit in the self-management support for CLBP in this pain center. The practice-focused question was the following: What are the unmet self-management support needs of the CLBP patients in a Midwestern state local pain clinic?

The purpose of this doctoral project was to identify the patients' perception of their needs in this facility's support for self-management of CLBP and to make recommendations for improvement. The implementation of the recommendations is expected to improve the effectiveness of the clinical, encounter-based patient education and counseling on self-management support of CLBP, in this Ohio pain management center. The potential for the transferability of this initiative to other pain centers will impact the aggregate level.

This section includes a discussion on the concepts, models, and theories that underpinned this doctoral project, supplementary information on the relevance of this initiative to nursing practice, the local background and context in which this project took place, and my role as the doctor of nursing practice student.

Concepts, Models, and Theories

This evidence-based doctoral project deals with the potential deficiencies in a local pain clinic's support for CLBP self-management. Several concepts, models, and theories directed the various aspects of this project. As quality improvement was the overarching goal for undertaking this project, the relevance of the concepts of quality and excellence in quality improvement are described in this section. Self-management is a behavioral change intervention for chronic clinical conditions, such as CLBP, and it was underpinned by the transtheoretical model (TTM) of behavior change. The CCM justified the need for self-management of CLBP. The model for evidence-based practice change was used to organize the planning, design, implementation, evaluation, and dissemination of this project. The middle range theory of self-care of chronic illness assists in the comprehension of the concept of self-management. The concepts of the diffusion of innovation theory were used in the stakeholders' involvement in the execution of the various aspects of this project.

Quality and Excellence

Quality means value. The worth of an item is its value. The worth of an item may be assessed in comparison to another item of optimum value, which is regarded as the gold standard. Excellence may be defined as the attainment of a goal or objective of best or optimal value. Consequently, to achieve excellence in health care setting, standards of quality are necessary to ensure the realization of safe and quality care and to measure clinical interventions and their desired outcomes. The PACIC survey employed in this study has been used to ascertain the quality of care patients received from health care organizations (Improving Chronic Illness Care, n.d.). It has been standardized for use in the assessment of several chronic illnesses, including chronic pain (Improving Chronic Illness Care, n.d.). Glasgow et al. (2005) found that a summary score of 2.65 is the average of a score range of 1 to 5 for chronic pain patients receiving treatment for pain clinics. Health care organizations with goals to achieve excellence in pain management must strive to surpass this summary score. The ethical principles of autonomy, beneficence, nonmaleficence, justice, and fidelity are inherent in excellence. Health care organization with the mission to achieve excellence must uphold these ethical principles. Health care organizations strive for recognition in excellence through accreditation from organizations such as the National Committee for Quality Assurance (NCQA, 2014). The NCQA offers three main domains of the accreditation process: The distinction in patient reporting experience, patient-centered medical homes content expert recognition, and patient-centered medical homes prevalidation programs (NCQA, 2014). High performance in the PACIC survey will enable health care organizations to meet the NCQA's distinction in patient reporting experience accreditation domain.

A constellation of patient satisfaction surveys developed by the Agency for Healthcare Research and Quality are used by the U.S. Centers for Medicare and Medicaid Services (CMS) in a benchmarking program in which health care organizations participate in to remain competitive. These are the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Surveys and Agency for Healthcare Research and

Quality [AHRQ], 2016). The CMS reimburses some of its providers based on their performance on these surveys (AHRQ, 2016; CMS.gov, 2017). As health care organizations have access to the CAHPS data, they see how they compare with one another and strive to improve the quality of their services. The patients can make informed choices on health care providers based on their CAHPS scores. High performance on the PACIC survey helps prepare health care organizations for the CAHPS surveys.

Transtheoretical Model

Self-management is a behavioral change intervention for chronic clinical conditions, such as CLBP, and it is underpinned by the TTM of behavior change. The TTM was originally developed by Prochaska and Diclemente to understand how change in behavior occurs and the interventions to assist in changing behavior (Prochaska, DiClemente, & Norcross, 1992). The TTM encompasses the biological, psychological, and social elements required for achieving a purposeful modification of lifestyle (Behavior Systems Inc, n.d.). The constructs of the TTM are the stages of change and are supported by scholars who have shown a staged linear progression of behavioral change (Prochaska et al., 1992). The transition from one stage to the other is facilitated by alterations in the decisional balance and self-efficacy (Behavior Systems Inc, n.d.). Change occurs over time, which explains the variability of the time a patient can remain in a certain stage (Behavior Systems Inc, n.d.). However, tasks needed for progression through the stages are not variable (Behavior Systems Inc, n.d.).

The TTM has been used in a variety of patient empowerment programs (Johnson, 2011). An example is its successful use in enabling health care workers to adopt physical exercise and activity (Skaal & Pengpid, 2012). The TTM of behavior change is in the following stages: precontemplation, contemplation, preparation, action, and maintenance (Prochaska et al., 1992). The stage of precontemplation spans through a period of 6 months in which change to the desired behavior is yet to be considered (Skaal & Pengpid, 2012). The influential factors at this stage may be poor health, fatigue, pain, lack of interest, depression; and cultural and social factors (Qiu, Sun, Cai, Liu, & Yang, 2012). At the stage of contemplation, the desired behavior change has been considered (Skaal & Pengpid, 2012). The patient has an idea of the merits and demerits of physical activity, but may be inclined more to the cons. At the stage of preparation, concrete plans have been developed and are ready to be executed, usually within a month (Skaal & Pengpid, 2012). At the action stage, the patient is actively involved in the expected behavior for about 6 months and is still transforming to the new behavior (Skaal & Pengpid, 2012). As the action phase requires a lot effort to perform, intensive support is necessary at this stage. At maintenance stage, the new behavior requires less effort to perform and has been ongoing for a substantial period (Skaal & Pengpid, 2012). The patient education and counseling for the self-management CLBP will incorporate the principles of TTM.

The Chronic Care Model

The need for self-management of CLBP is substantiated by the concepts of the CCM. The CCM belongs to a group of models categorized as the chronic disease models (CDM). The CDMs are models or methods of care used to improve the outcomes of chronic diseases (Grover & Joshi, 2015). The five common DCMs are CCM, improving chronic illness Care (ICIC), innovative care for chronic conditions (ICCC), Stanford model (SM), and community based transition model (CBTM; Grover & Joshi, 2015).

Each chronic disease model has features that differentiates them from one another (Grover & Joshi, 2015). For example, although some models focus on self-management (e.g., SM), others emphasize health systems approach (e.g., ICIC (Grover & Joshi, 2015). The community participation approach is used by a few (e.g., CCM; Grover & Joshi, 2015).

I chose the CCM because it is comprehensive and incorporates all the elements addressed in other models (Grover & Joshi, 2015). Moreover, the CCM is the most studied and the most widely used (Grover & Joshi, 2015). It was developed in the United States by Ed Wagner, MD, MPH, (National Institute for Health Improvement, n.d.) and is used in many countries (Canada, Spain, Denmark, Netherlands, United Kingdom; (Improving Chronic Illness Care, n.d.).

Application to chronic low back pain at the population level. The aim of the CCM is to eliminate or decrease the frequency of costly episodes of acute manifestations of chronic illness through coordinated care (Coleman et al., 2009). The CCM has six fundamental elements that constitute a system that facilitates quality chronic disease management: self-management support, delivery system design, decision support, clinical information systems, organization of health care, and the community. These six basic element of the CCM are coordinated in a manner that leads to the bolstering of the patient-provider relationships and improvement in health outcomes (Coleman et al., 2009). These six elements are geared towards empowering the patients with CLBP to manage their pain. Pain flare is common in patients with CLBP and prevention is the key (University of Wisconsin School of Medicine and Public Health, 2010). The prevention of acute flares of CLBP is the main purpose of application of the CCM. Acute flares in low back pain will lead to an increase in the frequency of lost work days, medical office visit and emergency room visits, and opioids abuse and misuse. A well-structured health care delivery system that has organizational leadership with excellent delivery system design, decision support, and clinical information systems will enable the health care provider to enhance the self-management support of patients with chronic back pain at individual level. At the population level, chronic (back) pain and chronic disease self-management programs in the community will reach a larger group of patients with CLBP (Ohio Department of Aging [ODA], n.d).

The Model for Evidence-Based Practice Change

The model for evidence-based practice change was used to organize the planning, design, implementation, evaluation, and dissemination of this project. The principles of the model for evidence-based practice change consist of six steps: needs assessment for change in practice, finding and appraising the evidence, practice change design, implementation, incorporation of the practice change, and dissemination of the practice change (Larrabee, 2014, p. 23).

The Middle-Range Theory of Self-Care of Chronic Illness

The middle range theory of self-care of chronic illness assists in the comprehension of the concept of self-management. Self-care is defined by Riegel, Jaarsma, and Strömberg (2012) as a way of preserving good health through activities that ensure excellent health and facilitate management of disease. Everybody, either ill or well, can perform self-care (Riegel et al., 2012). Self-care enables a sick person to achieve and maintain health without being dependent on others (caregivers, nurses, etc.) for care (Riegel et al., 2012). This concept of self-care is more relevant to patients with chronic disease as they retain the ability to care for self (Riegel et al., 2012). This definition of self-care is not concrete, as the meaning of self-care will differ with time and from patient to patient (Riegel et al., 2012). The self-care theory has been used to generate knowledge that aids nursing practice (Aidemarka, Askenäsa, Mårtenssonb, & Strömberg, 2013). An example is in the area of supporting patients with cardiac failure in their self-care (Riegel, n.d.).

The constructs of this theory are "self-care maintenance, self-care monitoring, and self-care management" (Riegel, et al., 2012, p. 5). Self-care maintenance is the deliberate set of activities used by patients with chronic disease to ensure stable physical and mental status. Self-care maintenance may also result from recommendations from primary care providers (Riegel et al., 2012).

Self-care monitoring refers to periodic observation of self for any symptoms or signs that may portend a deterioration or flare-up of chronic disease state. However, self-care management is the action taken by the individual when symptoms and signs that signal a change in the baseline of the disease are observed. These concepts are useful in nursing management of patients with chronic medical illness (asthma, hypertension, diabetes, heart failure etc.).

In the self-management concept, the patient reacts to the findings from self-monitoring (Riegel et al., 2012). Therefore, the patient with a flare up of back pain knows when to alert his or her primary care provider for help or to go to the emergency department or even take the appropriate measures to control his or her symptoms–take nonsteroidal antiinflammatory or muscle relaxants. Observation of the pain scale logbook will be useful in measuring the effectiveness of self-care management. The back pain helpbook and the AHRQ document on the noninvasive treatment of CLBP are evidence-based resources on the self-management of CLBP (Moore, Lorig, Von Korff, Gonzalez, & Laurent, 1999; The Agency for Healthcare Research and Quality, 2016).

The middle-range theory of self-care by Riegel et al. (2012) is about 3- to 4-years-old. As a result, there has not been any change since the development of this theory. However, the idea of the middle range self-care theory for chronic illness originated from Orem's self-care theory, which is a long-range nursing theory (Riegel et al., 2012). Although the self-care theory of Riegel et al. is restricted to chronic illness, Orem's theory is universal (Riegel et al., 2012). Orem's self-care theory includes a spectrum of self-care that ranges from full independent care to full dependent care (Riegel et al., 2012). Emphasis is on self-care deficit with nursing interventions being used to support patients needing care, until they are able to care for themselves (Riegel et al., 2012). However, in Riegel et al.'s self-care theory of chronic illness, every patient is able to care for him or herself. Riegel et al.'s self-care theory evolved from Orem's self-care theory.

Rogers’s Diffusion of Innovation Theory

Rogers’s (2003) diffusion of innovation theory helps in the comprehension of the process of acceptance of new ideas, or products, with the aim of using its strategic concepts to enhance their acceptance. According to the diffusion of innovation theory, there is a gradual spread of the reception of new ideas or philosophies in a group of people, and that the extent of acceptance may be placed in four categories, with decreasing acceptance from the innovator, through the early adopter, late adopters, and laggards (Kaminski, 2011). The innovators spread the good cheer about the new idea to the stakeholders using the concepts of peer networking and persuasion (Kaminski, 2011). In this project, the patients of other physicians in this pain center were needed, and the concepts of peer networking persuasion were useful in getting the permission of these physicians to allow their patients to participate in this research. In addition, the integration of nurses into the management process of patients required the use of these concepts.

Relevance to Nursing Practice

The change initiative on self-management support for patients with CLBP addresses the deficiencies in the local pain clinic that includes the lack of involvement of nurses in patient education and counseling on CLBP self-care. The insights gained from this project may encourage the involvement of nurses in programs aimed at preventing and providing self-management support for patients with CLBP. The nurses are prone to CLBP, and nurses have prerequisite skills for the implementation of support for CLBP self-management.

CLBP is common among nurses and nursing assistants due to the increased risk of back injuries associated with nursing care (Hartvigsen, Lauritzen, Lings, & Lauritzen, 2005). Patient transfer maneuvers are the most common cause of back cause of back issues among nurse and nursing assistants (Hartvigsen et al., 2005). Notwithstanding the various assistive devices for patient lifting and repositioning, many nurses sustain repeated back injuries and acute back pain, which progress to CLBP. The registered nurses rank sixth on the United States Bureau of Labor's list of occupations at risk of musculoskeletal sprains and strains (as cited in ANA, n.d.). Nursing assistants are a subgroup of the nursing workforce with highest prevalence of back injuries and chronic back pain, and are amongst the first ranking workers on the U.S. Bureau of Labor statistics' list of occupations at risk of occupational back injuries (as cited in (as cited in ANA, n.d.) The 2006 Bureau of Labor Statistics revealed that "nursing assistants, orderlies, and attendants" were absent from work for 49480 days, accounting for a frequency of 526 per 10,000 workers (as cited in Wilson, et al., 2011). The high frequency of absenteeism is because of back injuries resulting from manual lifting and moving activities associated with job tasks of nursing assistants (Wilson, et al., 2011). The programs developed to address back injuries and back pain in the nursing workforce are preventative. The nursing staff education on appropriate patient handling procedures is promising and has been shown to improve the confidence of the nursing staff in performing safe patient handling (Wilson et al., 2011).

The use of robotic patient handling devices has been practiced in top health care organizations such as the Veteran Affairs medical institutions (U.S. Department of

Veterans Affairs, n.d.). Furthermore, research in robotic nursing is making inroads in the use of robotics in performing patient handling tasks that predispose to injuries (Brunt, 2014). An interesting and promising application of robotics in nursing is through the use of robotic nurses (Charova, Schaeffer, & Garron, 2011). An example of such nurse robots is RIBA which is an acronym for "**R**obot for **I**nteractive **B**ody **A**ssistance." RIBA is capable of lifting a patient weighing up to 135lb from either a sitting or lying down position and move them to different location. Slipping or loss of grip is prevented by some sensors in their strong arms. It follows cues from operators through its two cameras and two microphones. RIBA teddy bear looks was designed to have a soothing effect on patients.

The insights gained from this project were used to develop programs that increase the involvement of nurses in the self-support services in the pain clinics. The recommendations for improvement could be incorporated into nurse-led patient education programs for nurses beset with chronic low back pain. The self-management support for nurses with chronic low back is a secondary preventive measure aimed at preventing the development of complications that result in absenteeism from work.

Local Background and Context

This project took place in one of the largest pain management practices in a Midwestern state. It is a small for profit private health organization with services for same-day non-pharmacological pain management procedures. At the top level of the organizational structure are the medical director, the administrator, and the practice manager. Six physicians, 2 nurse practitioners, 4 physician assistants, 2 nurses, 12 medical assistants, and 5 counselors staff the clinic. Three laboratory personnel operate its laboratory facility. Its educational amenities include a library, conference room and two study rooms. It is one of the practicum sites for a local family medicine residency program.

This pain management center serves about 500 chronic pain patients in a city of Ohio. About ninety-five percent of patients seen in the clinics are ≥45 years of age. Chronic low back pain is the most common clinical condition seen in this pain center and the average age of these patients is 55years.

The quality improvement initiative in this pain center started in January 2017. It was triggered by the opioid overdose and death epidemic and the need to stay within this Midwestern state's health improvement plan guideline requiring that chronic pain patients do not exceed the daily Morphine Equivalent Dose (MED) of 80mg (ODH, 2015, 2016; CDC, 2017). A way it sought to address this problem was through the improvement in its medical model approach to supporting self-management needs of patients with chronic low back pain. This approach was expected to lead to the improvement in disability and less use of opioid medications.

This clinic conducted a preliminary study using its electronic medical record data to determine a baseline data of the proportion of its chronic low back pain patients that have daily Morphine Equivalent Dose (MED) of ≤ 80mg. It also obtained a baseline data of these patients' SPAASMS score which is a clinical outcomes measure of chronic pain patients' response to treatment. The SPAASMS score card was developed and validated by Mitra, Chowdhury, Shelley, & Buettner in 2011. SPAASMS is an acronym for S- Score for pain, P- Physical activity levels, A- Additional pain medication, A- Additional Physician/ER Visits, S- Sleep, M- Mood, S- Side effects (See Appendix G). In summary , this clinic found that 25% of its CLBP patients had daily Morphine Equivalent Dose (MED) of ≤ 80mg and a corresponding SPAASMS score of ≤ 16/28. It then embarked on a quality improvement change process that was expected to improve these outcomes. The model for improvement was used to address this quality improvement initiative.

The Model for Improvement (MFI) is the most commonly used QI methodology. It was developed by the Institute for Healthcare Improvement (IHI) in 1996 and published in The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (1996). It uses a fast-paced cycle process known as the Plan Do Study Act (PDSA) cycles to test the effects of small changes, make them, and ultimately spread the effective changes through the practice or organization. It begins by asking 3 basic questions:

What are we trying to accomplish?
How will we know that a change is an improvement?
What changes can we make that will result in improvement?

Quality improvement teams then introduce and test changes designed to achieve the improvement aims using successive PDSA cycles until they arrive on a change they believe will produce the desired results and is ready for implementation and spread.

The aims of this pain clinic's quality improvement initiative were: 50% of CLBP patients were expected to have a score of 16/28 on the SPAASMS scorecard within six months, 50% of CLBP patients were expected to have the daily MED to be 80mg or below within 6months. SPAASMS is an acronym for S- Score for pain, P- Physical activity levels, A- Additional pain medication, A- Additional Physician/ER Visits, S- Sleep, M- Mood, S- Side effects.

The outcomes and process measures were used to track their success. The outcomes measures were: 1) Morphine Equivalent Dose of 80mg or below and, 2) A score of 16/28 on SPAASMS Score Card. The process measures were, monthly audit of electronic medical record charts for: 1) 100% documentation of teaching and counseling on self-management measures, and 2) 100% documentation of time spent on counseling and patient education.

The key change to test was improvement in the practice that assured that patient counseling education during provider-patient encounters, were performed and documented. Documentation was needed, as proof of trial and failure of other treatment modalities and justified the need to remain on a high daily dose of opiates than the stated guideline. The dictum was —if it was not documented it was not done. Documentation was hoped to challenge the provider to perform the required activity.

After six months of implementation, the PDSA strategy was used to assess this improved practice of ensuring patient counseling and education through documentation. The process measure goals were met but not the aims of the pain clinic’s quality improvement. The implication was that the documentation of the procedures was not enough to ensure that patients were actually counseled. The clinic then conducted PACIC survey with the purpose of finding out how to better improve their service (process measure) and chronic low back pain patients' self-management needs (outcomes measures). To recapitulate the pain clinic collected data from chronic low back pain patients using the Patient Assessment of Chronic Illness Care Survey. The clinic leaders requested the DNP student to do an analysis of data and make recommendations.

The major issue with chronic low back pain patients is the inadequate self-management of pain that leads to non-compliance with treatment. The non-compliance with treatment manifests as running out of pain medications before the next scheduled visit, reports of stolen pain medications, frequent disruptive phone calls for increase in the dose of medications, frequent unscheduled office visit, frequent emergency room visits, and the refusal to do adjunctive pain management procedures. Non-compliance with treatment affects both the patient and the health care organization. It increases the health care cost for the patients due to cost of co-pays for unscheduled office visits and emergency room visits, transportation costs and other ancillary services. From the healthcare organization's standpoint, the disruption of workflow affects its business bottom-line, as time needed to request for prior authorization for revenue generating procedures is spent on attending to the unmet needs of chronic low back pain patients. The proper support for self-management of chronic low back pain will improve the non-compliance issues, decrease the cost of care, decrease disability, and decrease the risk of opioid overdose and death. It is also observed that temporal factor impedes clinical encounter-based patient education and counseling on self-management. Nursing role was limited to admission assessments and follow-up screenings only. The involvement of nurses in patient education and counseling will supplement those given during patient-provider encounters. The transfer of this model of care to other pain clinics is expected to contribute toward the Healthy People 2020 objective of decreasing disability due to chronic pain by 10% (Office of Disease Prevention and Health Promotion (ODPHP), 2016).

Role of the DNP Student

I am a family nurse practitioner with interest in pain management. I have been practicing pain management as an advanced practice nurse in a moderate to high volume not-for-profit pain management center since March 2016. I am one of the two advanced practice nurses in this facility. My duties include follow-up assessment and planning of care for chronic pain patients. Currently, I am being prepared for the certification of the American Academy of Pain Management now known as the Academy of Integrative Pain Management (Academy of Integrative Pain Management, n.d.). My position in this quality improvement initiative was that of staff member in the student role. The pain clinic collected data from the chronic low back pain patients using the Patient Assessment of Chronic Illness Care Survey. The clinic leaders requested the DNP student to do an analysis of data and make recommendations..

The only bias that I have is the push to get nurses involved in the care of patients with chronic pain. Fortunately, the facility just hired two licensed practical nurses to do first visit assessment and follow-up visit screening, with hope of expanding their nursing role later. I would try the overcome this bias by stressing the importance of patient-centered care, and inter-professional collaborative approach to care. My motivation for this project was based on my interest in pain management, zeal to make a difference in the CLBP patients' healthcare, and to contribute to knowledge that could be used in other pain management practices to effect positive social change.

Role of the Project Team

The project team was limited to the project site preceptor and I, due to the limited human resources. The clinic administered the PACIC survey to a sample of 100 patients, and I was instructed to analyze the de-identified data and to report back with recommendations for improvement. The details of sample selection are as described in section 3.

Summary

This project is a quality improvement initiative aimed at enhancing a pain center's support for self-management needs of chronic low back pain patients that it serves. Hence, its main objective is to achieve excellence in chronic low back pain management through the delivery of healthcare services of high quality. The models that guide this project are the transtheoretical model, the chronic care model and the model for practice change. While the middle range theory of self-care clarifies the concept of self-management, the Rogers diffusion of innovation theory concepts are utilized in mobilizing the stakeholders. The needs assessment for support requirements of chronic low back pain self-management may help delineate the gap in practice, which includes the observed gap in the limitation of nursing role in the care of these patients. In the next section, the sources of evidence that support the gap in practice are described. In addition, this includes a systematic review of published findings and outcomes. The steps for the collection, analysis and synthesis of evidential data will be described.

Section 3: Collection and Analysis of Evidence

Introduction

CLBP is a population public health problem because of the associated disability that results in loss of days at work and a loss of income (Andersson, 1999). The National Ambulatory Medical Care Survey (NAMCS) revealed that 20,361 out of 884,707 physician office visits in the United States were as a result of back symptoms, placing low back pain at number 13 of top 20 reasons for office visits (as cited in NCHS, 2014). In addition, the lifetime prevalence rate of back pain in the United States is about 80% (as cited in NCHS, 2014).

In this pain clinic, support for self-management of CLBP patients' counseling is done during providers' clinical encounters. Generally, there are barriers to clinical, encounter-based counseling that include inadequate time, no proper training in counseling, inadequate reimbursement, and doubts about the efficacy of health behavior change interventions (ACPM), 2017). In addition, the nursing role is restricted to the assessment of new patients in this pain clinic, thus neglecting the patient education and counseling role. However, nurses play a role in patient education and counseling (ACPM, 2017; Loxton, 2003).

This pain clinic had a potential risk for increased flare-ups of CLBP, which can lead to a rise in emergency room visits, unscheduled office visits, phone call requests for adjustment in medication, interference with the facility workflow, and with potential to decrease the facility's returns on investment. The need for enhancing the self-management of CLBP is reinforced by the proof of engagement in self-management requirement for the approval of insurance prior authorization for invasive nonpharmacological interventions for CLBP. The risk for acute exacerbation of CLBP may be affected by the quality of the clinical, encounter-based counseling on self-management of CLBP. The gap-in-practice that I addressed was the clinical, encounter-based patient education and counseling that lacks adequate support for self-management of CLBP.

Practice-Focused Question(s)

The guiding practice-focused question was the following: What are the unmet self-management support needs of the CLBP patients in a Midwestern state local pain clinic? The purpose of this doctoral project was to ascertain the unmet needs of patients' self-management support by analyzing the results of a patient study that was performed by this clinic. Following that analysis, I will then make recommendations for improvement in practice based upon the voice of the patients.

Sources of Evidence

The CLBP patients attending the pain management clinic were the source of evidence collected to answer the research question. The PACIC survey was used to collect data from CLBP patients regarding their perception of how this pain clinic supported their self-management needs. In the patient empowerment or activation domain, patients' views are solicited when developing a treatment plan. Patients are given treatment options to consider. They are asked about problems that arise from the treatment medications including their side effects.

The health care delivery structure domain is concerned with providing the patients with a list of self-management interventions to improve their low back pain, organization of these patients’ care, and evaluation of the impact of the patients’ self-management activities in relation to any improvement in their back pain. The care customization domains entails asking the patients about their goals in caring for their chronic pain, helping them to set goals, providing them with a copy of their treatment plan, urging them to attend a class for pain control, and asking about their health routines. In the contextual problem-solving component, patients’ values and customs are considered during care recommendations. Patients are helped to develop treatment plans that can be executed daily and could be used for flare-ups of back pain. Patients are asked how the chronic back pain affects their life. The domain of care coordination involves activities such as follow-up calls after office visits, encouragements to attend helpful community programs, referrals to special services (dietician, health educators etc.), and evaluation of the impact of treatment received from other specialists.

The Published Outcomes and Research

The resources used to locate research that pertains to CLBP self-management were Cochrane Database of Systematic Reviews, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest Nursing & Allied Health Source, MedLine, Ovid, Joanna Briggs Institute, the CINAHL, and MedLine simultaneous searchin the Walden library (see Appendix A). The key search terms were *exercise, changing behavior, transtheoretical model, self-management, CLBP, systematic review, and meta-analysis, qualitative study, self-treatment, behavioral change, rehabilitation,* *self-management support, self-management effectiveness, self-care guidelines adult patients,* and *protocol for CLBP* (see Appendix B). The Boolean search strings used included exercise and changing behavior and transtheoretical model, self-care and CLBP and qualitative study, self-management and CLBP and systematic review and meta-analysis, and self-treatment and CLBP. This review spanned through a 15-year period and included 11 published articles that met the inclusion and exclusion criteria of the search terms.

The evidence in the literature was in favor of the application of self-care concepts in the management of patients with CLBP. The literature also supports the use of behavioral change models, such as the trans-theoretical model, in enhancing self-care management of patients with CLBP.

Two out of the 11 studies reviewed were at Level A of the American Association of Critical Care Nurses Levels of Evidence Classification (Du et al., 2017; Oliveira et al., 2012). Eight of them were at Level C (Crowe, Whitehead, Gagan, Baxter, & Panckhurst, 2010; Gavish et al., 2015; Harman et al., 2014; Kawi, 2014a; Kawi, 2014b; Kawi, 2014c; Snook, 2004; Taha, Mohamed, & Abd El-Aziz, 2015), while only one study was a Level D (Burbank, Reibe, Paula, & Nigg, 2002). A Level A study is the meta-analytic study of several controlled studies, which usually yields outcomes that are consistent with an intervention or treatment (Peterson et al., 2014; see Appendix C). The systematic review of randomized controlled trials also belong here (Peterson et al., 2014). A Level C study includes studies with evidential data from integrative reviews, qualitative or systematic reviews of qualitative studies, or randomized controlled trials with variable results

(Peterson et al., 2014). Eight out of the 11 articles were qualitative in nature (Burbank et al., 2002; Crowe et al., 2010; Gavish et al., 2015; Harman et al., 2014; Kawi, 2014a; Kawi, 2014b; Kawi, 2014c; Snook, 2004; Taha et al., 2015). Du et al, (2017) showed that self-management of CLBP had a better effect on pain and disability than the Oliveira et al.'s (2012 study) that suggested that self-management interventions had minimal effect on pain and disability.

Du et al. (2017) conducted a systematic review and meta-analytic study on randomized controlled trials (RCT), published up to 2015, to ascertain the efficacy of self-management programs on CLBP. The sources of the journal articles used in the study were the Web of Science, Pubmed, Cochrane Library, Elsevier, and the CINAHL. The study entailed data extraction and critical appraisal of 13 randomized controlled trials, which they classified as moderate quality. Moderate quality meant that further research on the effect of self-management programs on pain and disability would have had a significant impact on the certainty in the estimate of effect of self-management programs and may alter the estimate of effect (Du et al., 2017). The outcomes of these studies were categorized by their weighted effects on pain and disability over time as follows: immediate, short term, intermediate, and long-term effects. Nine RCTs were grouped into interventions that led to immediate response, five RCTs for short term, three RCTs for intermediate, and four RCTs for long term. There was a sustained effect of these interventions on pain and disability over time as shown by weighted effect sizes that were almost the same size across all of the four distinct durations of the interventions. Du et al. stated that self-management programs have a moderate effect on pain severity but small to moderate effect on disability. Du et al. considered a self-management program a useful approach to managing CLBP. Du et al. suggested that preference should be given to programs that are theory driven, with face-to-face mode of delivery, and Internet-based approach as useful alternatives for implementing self-management programs (Du et al., 2017).

One of the guiding models of this doctoral study was the trans-theoretical model of behavior change. Exercise is one of the self-management measures used by CLBP patients (Crowe et al., 2010). Elderly patients constitute a substantial number of patients seen in this Ohio pain clinic. Falls and decreased function associated with aging is due to loss of muscle strength, with accompanying decline in flexibility, range of motion, and diminished sense of balance. CLBP in the elderly will cause further decline in function. When performed in old age, exercise can enhance muscle strength, improve function, and decrease falls and disability (Burbank et al., 2002). Burbank et al. (2002) showed that the transtheoretical model of behavior change is useful in empowering elderly patients to engage in exercise. Benefits of exercise are the same in both young and older adults; hence, a behavior change counseling program that incorporates the elements of the transtheoretical model will be applicable to all patients with CLBP.

The improvement of self-management of CLBP patients is one of the underlying principles of this doctoral project. A novel back pain management gadget that providers could recommend to CLBP patients to support the self-management of their pain is an electronic device known as kyrobak (Gavish et al., 2015). Kyrobak is a continuous motion device that is used to release pressure in the vertebrae and relieve pain (Gavish et al., 2015). In a prospective RCT to evaluate the efficacy of kyrobak for home use by CLBP patients, Gavish et al. (2015) revealed that kyrobak may be useful in the short-term relief of moderate pain level in nonspecific CLBP. This device might be beneficial for long-term use (Gavish et al., 2015).

Kawi supported the importance of support for self-management of CLPB (Kawi,2014a, 2014b, 2014c). In a nonexperimental, cross-sectional study, Kawi (2014b) found support for self-management significantly influenced self-management and mental health of patients with CLBP. Doing exercises, using medications, and lifestyle changes were the common self-management strategies, while prescribing pain medications, reassurance, and resource information were the providers' perceived support for self-management measures (Kawi, 2014b). In a secondary analysis of data collected from two CLBP studies to determine factors that will predict patients' response to self-management measures, Kawi (2014c) found that education, self-management support, age, effectiveness of pain treatment, and overall health were found to be predictive of patients' engagement in self-management CLBP. Kawi (2014c) showed that the main self-management activities were taking prescribed medications and remaining physically active while self-management support activities were writing medication and nonmedication prescriptions, providing nonpharmacological therapies, and reassurance. Anxiety and fear were the most common concerns regarding functional ability.

Crowe et al. (2010) determined the knowledge of self-management strategies of patients with CLBP and how the health care professionals perceived their role in facilitating self-management. Crowe et al noted that CLBP is a difficult health problem that is not easy to treat; it is associated with may problems ranging from physical disability to psycho-social issues that lead to increased demand for health care resources. According Crowe et al., most clinical guidelines endorse self-management approaches as the desired option. Crowe et al. collected data from 64 patients regarding their self-management strategies and 22 health care personnel nominated by the patients who were asked about how they perceived their role in their patient's self-management. Content analysis was the methodology used to analyze the collected data. Crowe et al. showed that the most common strategies that participants used to manage their CLBP were heat therapy, medications, and exercise. Although the physical therapists described their role as recommending exercises, particularly core strengthening exercises, the general medical practitioners expressed their role as prescribers of pain medications, sick-off certificates, and referral to other specialists. Crowe et al. stated that patients employ strategies that help relief and prevent flare-ups of their back pain and that these strategies reflect a combination of personal experience that arise from active decision making and professional advice.

The success of the self-management of CLBP is impacted by the availability and adequacy of supportive services. Harman et al. (2014) described an approach used by physical therapists to improve the self-efficacy and self-management skills of injured members of the British military with CLBP. Harman et al. conducted a qualitative study using audio and video-recorded data from field observations and interviews. Inductive analysis process enabled the deciphering of the physical therapists' approach to enhancing self-efficacy. The physical therapists’ approach entailed establishing a trusting relationship, ensuring that the patients understood the need for active involvement in self-management activities, and working with them to find solutions that they will adopt. The concepts of behavior change theories, such as the transtheoretical model of change, motivational interviewing, motivational model of patient self-management, and patient self-management were used in this process. The physical therapists used the concepts of therapeutic alliance and behavior change methodologies to determine the patients' perceived needs and then used their self-efficacy to provide for the identified needs. Harman et al. posited that the awareness that rehabilitation of patients requires the adoption of new behaviors makes it necessary for providers to be conversant with psychological methodologies that boost behavior change to improve self-management outcomes.

Nurses have a role to play in the management of CLBP patients. Taha et al. (2015) evaluated the efficacy of a nursing procedure that takes into consideration the knowledge and practice of adult patients with low back pain. It was a quasi-experimental design using pre-post assessments of outcomes. It started with a sample of 40 participants with CLBP (low back pain longer than 6 months) with seven dropping out during the study. The nursing intervention protocol consisted of theoretical sessions in which participants were exposed to a low back pain self-management instructional manual using different teaching strategies, such as media presentations inform of posters and videos, lectures, and discussions. There was a practical session in which patients and caregivers were shown how to prevent back strains through improvements in body mechanics, lifting, and body positioning. The practical session also included demonstrations on home exercise programs and the use of hot and cold compresses. Each participant performed return demonstration. The results of the study were improvement in the patients' knowledge and practice and improvement in disability and pain levels. Taha et al. suggested the replication for this study using a RCT and hoped that the instructional manual will be adopted for use in the management of CLBP.

The patients and their health care providers have shared responsibility in the management of CLBP. Although the patients are expected to possess the necessary skills to self-manage their CLBP, the health care providers, in addition to their traditional professional role, should provide supportive services that will enhance the patients' self-efficacy in managing their CLBP. Snook (2004) noted that nonspecific low back pain is prevalent in adults. According to Snook, nonspecific back pain can be painful, is not associated with any definite structural pathology, and is common with advancing age. Snook highlighted the increasing support in the medical literature for patients to self-manage their CLBP, with support from the health care providers. Snook noted that age, occupation, genetics, and personal behavior contribute to low back pain. The personal behavior factor underscores Harman et al.'s (2014) position on the importance of the application of concepts from behavior change theories in the health care providers' support programs for self-management of CLBP. Snook included controlling pain with nonprescription medicines, remaining physically active, exercising, daily activity aides, changing beliefs, enhancing coping skills, and the prevention of the next episode.

Evidence Generated for the Doctoral Project

The sources of evidence were the CLBP patient receiving treatment in an outpatient pain clinic in Ohio. This pain management center had a facility for same-day pain control procedures. It has a total population of 500 patients. It served 500 chronic pain patients, and about 95% of its patients were ≥45 years of age. The average age of the CLBP patients seen here was 55years. The sample size was determined based on the Joint Commission's requirements on when data for structure or process of care is being collected (Larrabee, 2014; Walter Reed National Millitary Hospital, n.d). For a population of 101 to 500 patients, the suggested sample size was 50. However, a sample of 100 was used for for better respesentation of the popluation of patients seen in this clinic. This sample was selected through simple random sampling method using a random sample tables located at the Nation Institute of Standards and Technology website (National Institute of Standards and Technology, 2017). The participants yielded information on what their chronic self-management needs were through a survey that assesses how well this pain clinic has supported their self-management needs. I stopped reviewing here. Please go through the rest of your section and look for the patterns I pointed out to you. I will now look at your Section 4.

The clinic used the 20-item Patient Assessment of Chronic Illness Care (PACIC) Survey to collect data. This tool has been standardized for use in patients with chronic illness including chronic pain. It measures specific actions or quality of care patients received from a health care delivery system. It is a brief and self-administered survey that has been used in many settings. It is composed of 5 subscales based on the key components of the Chronic Care Model. It has an overall summary score. The 5 subscales are: Patient Activation (items 1-3), Delivery System Design/Decision Support (items 4-6), Goal Setting (items 7-11), Problem-solving/Contextual Counseling (items 12-15) and Follow-up/Coordination (items 16-20 (See Appendix E). The patient activation represents the activities in which patient participates in decision making. The Delivery System Design/Decision Support (items 4-6), entails activities in which patients comprehension of their care is enhanced through organization and provision of information. The Goal Setting (items 7-11), deals with delivery of information and associated goal setting. The Problem-solving/Contextual Counseling (items 12-15) involves a treatment plan that considers the patients' cultural and social environment. Follow-up/Coordination (items 16-20) entails care coordination and following up with patients after hours to ensure that they are compliant with treatment.

The clinic obtained informed consent from these patients before administering the survey. In order to prevent bias towards response to the survey questions the clinic did not give any special incentives. The DNP student was asked to analyze the de-identified survey data and make recommendations. Patient confidentiality and privacy were observed throughout the whole process. The project site approved the use of data from this survey and for use for research according to the rules on the data use agreement document.

Analysis and Synthesis

Data points on the 20-item Patient Assessment of Chronic Illness Care (PACIC) Survey were entered in an excel spread sheet which was used to generate tables, bar chart, pie charts, and graphs for easy interpretation of the findings. Analysis and synthesis of the findings were made in comparison with published outcomes in the research literature. Recommendations for improvement were based on the findings.

Summary

The aim of this project is to determine the self-management support needs of chronic low back pain patients in a pain management clinic and to make evidence based recommendations for improvement. There is considerable evidence from published outcomes supporting the need for healthcare providers to guide patients on self-management of chronic low back pain. In the ensuing section, the research study findings including the analysis and synthesis of the findings will be discussed. The recommendations and the evaluation of their implementation will also be detailed.

Section 4: Findings and Recommendations

Introduction

This doctoral project was concerned with the improvement in the quality of care of a Midwestern state pain clinic to patients with CLBP. This quality improvement initiative was triggered by the recent prescription opioid overdose and death epidemic and this Midwestern state's guidelines for prescription opioids that required pain management providers to stay at or below a daily 80mg morphine equivalent dose (MED) for all prescribed opioids. One way this clinic sought to address this problem was the improvement in the quality of the medical model approach to supporting self-management needs of patients with CLBP. The documentation of patient education given during provider-patient encounters was believed to ensure provider compliance with these patient education activities. However, the poor patient outcomes associated with this practice led to the administration of the PACIC Survey to a sample of CLBP patients attending this pain clinic to obtain their opinion regarding this clinics support for the self-management of their chronic pain. It is expected that programs designed to address these needs will improve the process and patient outcomes. A common problem with CLBP patients is noncompliance with treatment. Noncompliance with treatment is due to poor self-management of CLBP, and it manifests as an acute flare of CLBP, running out of pain medications, reports of stolen pain medications, and medication overdose. Noncompliance with treatment affects both the patient and the health care organization. It increases the health care cost for the patients due to copays for unscheduled office visits and emergency room visits, transportation costs, and other ancillary services. From the health care organization's standpoint, the disruption of workflow due to frequent disruptive phone calls for increase in the dose of medications, and frequent unscheduled office visit, affects its bottom-line, as time needed to request for prior authorization for revenue generating procedures is spent on attending to the unmet needs of CLBP patients. The proper support for self-management of CLBP will improve the noncompliance issues, decrease the cost of care, decrease disability, and decrease the risk of opioid overdose and death.

The gap-in-practice that this doctoral project sought to address was the clinical, encounter-based patient education and counseling that lacked adequate support for self-management of CLBP. The guiding practice-focused question that was aimed at ascertaining what the patients perceived their self-management support needs to be was the following: What are the unmet self-management support needs of the CLBP in a Midwestern state local pain clinic?

The sources of evidence were the CLBP patients attending this pain. The data on the self-management support needs of these patients were obtained by the pain clinic using the PACIC survey. The data collected were expected to reflect the extent to which this clinic met the self-management support needs of patients with CLBP.

Findings and Implications

Demographic Analysis

The demographics of patients surveyed were characteristic of patients with CLBP (Meucci, Fassa, & Faria, 2015). As shown in the column chart in figure 1 below, there were more females than male participants in this study. Sixty-seven percent of the survey participants were females, while 33% of them were males. The majority of the patients were within the 50 to 70 age group, regardless of gender.

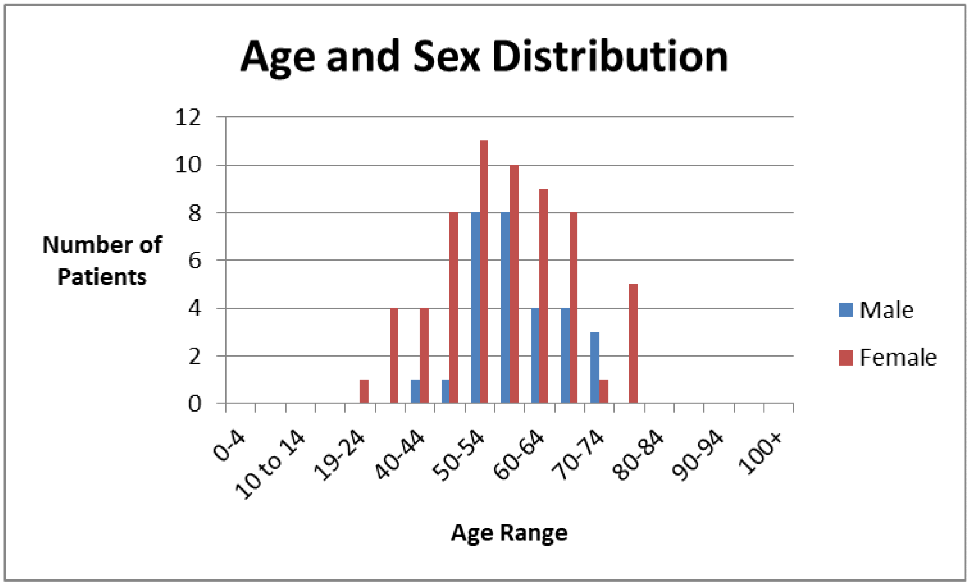

Figure 1. The age and sex distribution of the PACIC survey participants.

The length of time the participants have had chronic low back pain ranged from 2 to 45 years, an average of 14.95 years, a median of 13 years, and a mode of 10 years. Fifty-six percent of the patients had CLBP only, while the rest had pain in other regions of the body. Eighty-eight percent of the respondents had tried other forms of treatment while 7% had not. Seventy-nine percent of the participants were unemployed.

The Patient Assessment of Chronic Illness Care Survey Data Analysis

One hundred data points for each 2- item question on the PACIC survey were categorized according to five response options, named and weighted as follows: almost *never* (1), *generally not* (2), *sometimes* (3), *most of the time*, (4) and *almost always* (5). The weighted average of response to each item question was calculated. The average score for the weighted average scores of item questions that make up the PACIC subscale was then computed in Table 1 below. The average scores for all the subscales were then calculated to determine the summary score (see Table 1 and Figure 2 below). As is evident in Table 1 and Figure 2, this pain management clinic PACIC survey subscale and summary scores were below those reported by Glasgow et al. (2005). As is also shown in Figure 2, the pattern of the PACIC subscale scores was the same for both the current and the Glasgow et al. studies. The patient activation (Items 1-3) subscale had the highest score followed by the delivery system design/decision support (Items 4-6), problem-solving/contextual (Items 12-15), goal setting/tailoring (Items 7-11), and follow-up/coordination (Items 16-20) scores in that order. An average score of 5 in either the PACIC subscale or summary score was the most desirable score, while an average score of 1 in either the PACIC subscale or summary score was the least desirable score. As depicted Table 1 and Figure 2, this Midwestern state pain management clinic scored below all the PACIC subscales and summary scores of the Glasgow et al. study. This pain clinic did not met the self-management support needs of its CLBP patients.

Table 1

The Average Scores of the PACIC Survey Sub-scales for the Current and Glasgow Studies

The PACIC Subscales	Current Study	Glasgow et al., (2005) Study*
Patient Activation	2.58	3.03
Delivery System Support	2.17	3.01
Goal Setting/Tailoring	1.93	2.42
Problem-Solving/Contextual	2.14	3.00
Follow-up/Coordination	1.61	2.14
Summary Score	2.09	2.64

Sample Size	100	41

Note. Adopted from Glasgow, R. E., Wagner, E. H., Schaefer, J., Mahoney, L. D., Reid, R. J., & Greene, S. M. (2005). Development and Validation of the Patient Assessment of Chronic Illness Care (PACIC). Medical Care, 43(5), 436-444. (within public domain).

- See Appendix E for the Definition of the Subscales

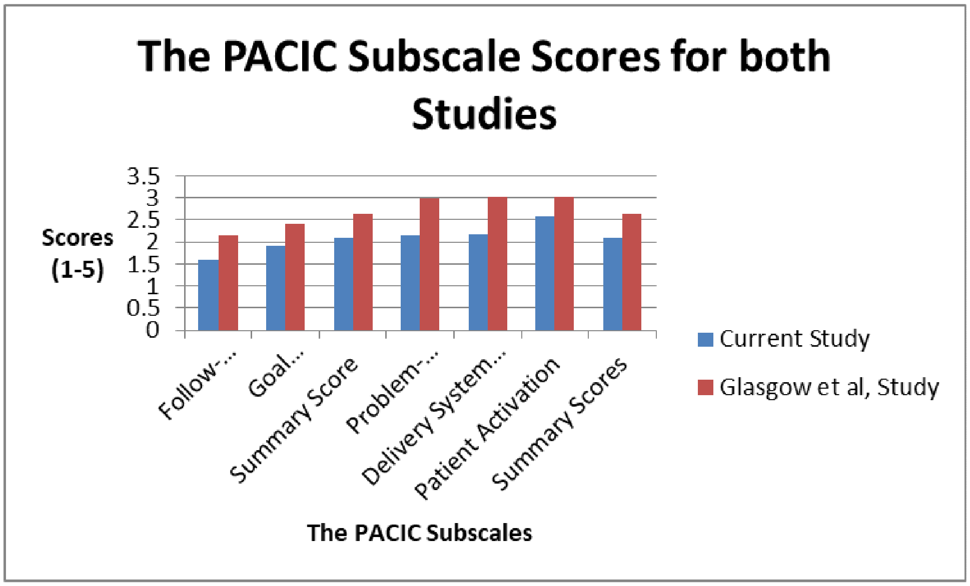

Figure 2. The average scores on the 5 domains of the PACIC survey, in both studies.

Unanticipated Limitations or Outcomes

There were no unanticipated limitations or outcomes. There was some missing information in the demographic data collected, but these were not significant enough to influence the findings of this study.

The Implications Resulting From the Findings

There were no unanticipated limitations or outcomes. In the findings of the demographic analysis of the study data, I found that CLBP is a chronic disease requiring long-term therapy with opioid analgesics. More women than men were affected, which may be due to low pain threshold in women and the tendency for late presentation in men (Fillingim, King, Ribeiro-Dasilva, Rahim-Williams, & Riley, 2009). The majority of the patients were within the 50 to 70 years age group, regardless of gender, with an average

age of 56 years, modal age of 52 years, the median age of 57.2 years, and age range of 24 to 76 years. Nurse-led low back pain prevention programs targeted at young people could lead to a drop in the incidence of chronic low back pain later in life. On the average, these patients live a considerable distance away from the clinic, which may affect compliance with treatment. The gravity of CLBP may explain the high frequency of trial of other forms of treatment noted in this study. With adequate guidance, these patients will be most likely to try any evidence-based therapy.

This Midwestern state pain management clinic scored below all of the PACIC subscales and summary scores of the Glasgow et al. (2005) study. This pain clinic did not meet the self-management support needs of its CLBP patients. Lack of support for the self-management of CLBP has several implications for the individuals, communities, institutions, and the systems.

Individual Level

At the individuals' level, CLBP patients are prone to noncompliance with treatment. Noncompliance with treatment was due to poor self-management of CLBP. These patients usually present with an acute flare of CLBP due to lack of knowledge pf preventive measures. It increases the health care cost for the patients due to copays for unscheduled office visits and emergency room visits, transportation costs, and other ancillary services. The proper support for self-management of CLBP will improve the noncompliance issues, decrease the cost of care, decrease disability, and decrease the risk of opioid overdose and death.

Community Level

The disability to due to low back pain can strain community resources. Patients depend on families for assistance. In this study, about 80% of patients affected were unemployed. However, judicious use of the limited community resources will enhance self-care and improve disability due to CLBP

Institutional Level

At the health care organization's level, the disruption of workflow due to an increase in the frequency of phone calls for medication dose adjustment, and increase in unscheduled office visits, affects its business bottom-line, as time needed for prior authorization requests for revenue generating procedures is spent on attending to the unmet needs of CLBP patients.

System Level

Health care organizations operate mainly as open systems to remain relevant in the ever-dynamic health care delivery system. They must engage in governmental programs that offer reimbursements based on mandatory or voluntary participation. A constellation of patient satisfaction surveys developed by the AHRQ are by the U.S. Centers for Medicare and Medicaid Services (CMS) in a benchmarking program in which health care organizations participate in, to remain competitive in the health care industry. These are CAHPS Surveys by AHRQ (2016). The CMS reimburses some of its providers based on their performance on these surveys (AHRQ, 2016; CMS.gov, 2017). As health care organizations have access to the CAHPS data, they see how they compare with one another and strive to improve the quality of their services. The patients make informed choices on health care providers based on their CAHPS scores. Poor performance on the PACIC survey signals the need to work to achieve better scores on the CAHPS surveys.

Potential Implications for Social Change

Millions of people in the United States are affected by CLBP. CLBP has led to the misuse, abuse, and addiction to opioid analgesics and has the potential for more disability and death due to opioid overdose. The use of patients' opinions to inform the providers about their needs may lead to effective programs on self-management that decreases dependence on medication, enhances health outcomes, and decreases the use of medical services.

Potential Contributions to Nursing Practice

Nurses have the skills to educate CLBP on self-management (American College of Preventive Medicine, 2017). Nurse-led CLBP self-management preventive programs can improve patient self-management of pain, reduce medication use, and decrease the number of medical and emergency department visits.

Recommendations

In the findings of this study, I confirmed the practice gap in the clinical, encounter-based patient counseling, which is devoid of elements needed to support CLBP patient's self-management. The proposed solution to this gap-in-practice is two-fold, namely the integration of the PACIC elements into the routine clinic encounters and secondary products that will support the use of the PACIC elements. Also, suggestions for the postimplementation of the recommendations evaluation are described.

The incorporation of the PACIC subscale items into the clinical, encounter-based counseling program will enhance this pain clinic’s support for self-management of CLBP patients. The clinical, encounter-based counseling will include the following elements displayed in Table 2 below. The PACIC Survey tool from which the recommendation items in Table 1 are derived is located in Appendix D. The integration of these PACIC components into the patient education and counseling section of the electronic medical record system used by this pain clinic will facilitate this process. The electronic format of these items will have boxes for check marks and comments to enable the clinicians to keep track of their patient's self-management support activities.

Table 2

*The Recommendations for Clinical-Encounter-based Counseling on Self-management of CLBP**

Support Domains	Activities that Address the Support Domains During Clinical Encounters
Patient Activation	1) Involve patients in treatment plans 2) Give patients treatment options 3) Ask patients about problems related to treatment given e.g. side effects of medications and non-pharmacological interventions
Delivery System Design/Decision Support	1) Provide patients a list of CLBP* Self-Management Interventions 2) Ensure that patients care is well organized 3) Periodically evaluated patients’ self-care
Goal Setting/Tailoring	1) Ask patients about their treatment goals 2) Help patients set specific goals 3) Provide patients with a copy of treatment plan 4) Urge patients to attend the facility’s

	pain control class[b] 5) Periodically ask patients about their health routines
Problem-Solving/Contextual	1) Recommend care based on patients values and culture 2) Help develop treatment plans that can be executed daily to prevent acute flares of back pain 3) Ask patients about the impact of Chronic low back pain on their lives.
Follow-up/Coordination	1)Follow-up calls after office visits[b] 2) Encourage patients to attend useful community programs e.g. Y.M.C.A. programs[c], and referral to special services such as Dieticians for the overweight patients 3) Evaluate the impact of treatments received from other specialists

Note. Adapted from the Patient Assessment of Chronic Iillness Care survey of the Improving Chronic Illness Care program, supported by The Robert Wood Johnson Foundation, with direction and technical assistance provided by Group Health's MacColl Center for Health Care Innovation in Seattle, Washington State.

*Chronic Low Back Pain

[a] The Back Pain Helpbook and the AHRQ back pain resource – Noninvasive Treatments for Low back pain (A Summary of the
Research for Adults) are useful resources

[b] This clinic's discontinued pain control class will be reinstated

Adjuncts to the Primary Recommendation

The adjuncts to the primary recommendation are two evidence-based resources and a pain control class. The two evidence-based resources suggested for use in combination with PACIC subscale items are: The Back Pain Helpbook (Moore, Lorig, Von Korff, Gonzalez, & Laurent, 1999) and the AHRQ back pain resource (The Agency for Healthcare Research and Quality, 2016). Although these educational materials are targeted at patients, healthcare providers are expected to be familiar with their contents to guide patients in their use better. This is because, while some patients can read, understand and follow instructions in these manuals, others may require additional help in using them. As published in the American Journal of Surgery, and reported at an international news agency website, the Reuters, patients are not compliant with discharge plans because the hospital discharge instructions are targeted at patients with high literacy levels (Choudhry et al., 2016; Rapaport, 2016). This observation is supported by another study on patient education and care instructions issued after office visits, in which over 74% of the respondents had completed undergraduate or graduation, and 98.6% reported that English is their primary language (Neuberger et al., 2014). The authors of the American Journal of Surgery study suggested that patient education and discharge instructions should be written at the sixth-grade literacy level (Choudhry et al., 2016). A research study showed that the goals of after visit summary (AVS) which contains providers office visit summary including patient education instructions are not met based on their finding that about 60% of the respondents indicated that they did not need it (Neuberger et al., 2014). The authors of this study suggest that further research is required to elucidate the barriers to the utilization of office visit summaries (Neuberger et al., 2014).

The Back Pain Helpbook

In a randomized control trial by Lorig et al (2002) and cited by Du et al (2017) the use of the Back Pain Help Book was shown to be effective in decreasing pain intensity and disability in patients with CLBP. This self-help book is an easy to read 224-page book on self-management of chronic low back pain. It has sections on self-assessment of chronic back pain, understanding back pain for effective self-care, effective self-care, treatments for back pain, physical activity and exercise, daily ideas for better living, and the maintenance of self-care plans (Moore, Lorig, Von Korff, Gonzalez, & Laurent, 1999). The help book costs about $14.00 and is available at various internet bookstores. This evidence-based self-help book suggested use is three-fold. Interested patients can purchase and use it under the guidance of primary care providers. The pain management providers are expected to know the contents of this book and should be able to discuss it about the PACIC principles during the clinic encounters with chronic low back pain patients. The contents of this book will guide the weekly Pain Control Class of this clinic.

The AHRQ Non-invasive Treatments for Low Back Pain

The Non-invasive Treatments for Low Back Pain pamphlet is an excellent patient education resource published by the Agency for Healthcare Research and Quality (AHRQ, 2016); see Appendix H. This patient instructional material is based on evidence gathered from 156 research studies on non-surgical therapies for low back pain and published before April 2015. The researchers, healthcare professionals, experts, and the public contributed to the publication of this manual. It is an easy to read and illustrated self-help manual with the definition of low back pain, how it is treated, the pharmacological and non-pharmacological treatments for acute, subacute, and chronic low back pain, including their adverse effects. It gives a summary of each treatment modality and research findings regarding its efficacy in controlling low back pain. As already discussed above, it is suggested that the healthcare providers familiarize themselves with the contents of this patient education material, to better assist the patients in its use. This patient education resource will be used in conjunction with the PACIC based provider encounter patient counseling and the weekly Pain Control Class of this clinic.

Reinstatement of the Clinic’s Weekly Pain Control Class

This pain clinic used to host a free once a week pain control class for its patients with chronic pain. This educational activity was stopped following a shortage of nursing staff. The hiring of two nursing personnel makes the restoration of this clinic's pain control class worthwhile. It will supplement the routine provider counseling of patients. The two evidence-based resources suggested for use in combination with PACIC subscale items, that is, the Back Pain Helpbook and the AHRQ back pain resource are suggested for use in this activity. It is recommended that the pain control clinics develop their class schedule to cover the contents of both materials in a three monthly cycle to synchronize with the PACIC six-monthly survey requirements. However, a schedule developed for this pain clinic's weekly pain control class using the Back Pain Helpbook is as in Appendix F.

Post Implementation Evaluation

In this section, an outline for the evaluation of the implementation of the recommendation is presented. This is categorized into formative and summative evaluations.

The formative evaluation is used to appraise the recommendations implementation process. The PACIC survey (located in Appendix D) will be used to achieve this objective. It helps assess the providers’ performance in the five domains of support for self-management of chronic low back pain. It is user-friendly and is self-administered by the patients. It should be administered every three months, in either the paper or electronic formats. Identified deficiencies should trigger the necessary corrective actions.

The overarching goal of this initiative is to improve chronic pain and decrease disability and decrease the daily opioid use according to the State guideline. This clinic has embarked on a quality improvement program with the measurable outcomes of 50% of CLBP patient achieving a daily ≤80mg Morphine Equivalent Dose of opioid analgesics and a SPAASMS score of ≤ 16/28 in a specified period. This program was triggered by the opioid overdose and death epidemic and the need to stay within this Midwestern state health improvement plan guideline requiring that chronic pain patients do not exceed the daily morphine equivalent dose (MED) of 80mg (ODH, 2015, 2016; CDC, 2017).

The SPAASMS scorecard was developed and validated by Mitra, Chowdhury, Shelley, & Buettner in 2011. SPAASMS is an acronym for S- Score for pain, P- Physical activity levels, A- Additional pain medication, A- Additional Physician/ER Visits, S- Sleep, M- Mood, S- Side effects. These will form part of the summative evaluation process.

Contribution of the Doctoral Project Team and the Role of the DNP Student

The project team was limited to the project site preceptor and me, due to the limited human resources. The clinic administered the PACIC survey to a sample of 100 patients, and I was asked to analyze the de-identified data and to report back with recommendations for improvement. My project site preceptor is the medical director and board certified in anesthesiology, pain medicine, palliative medicine, and addiction medicine. He was an associate professor of surgery in a medical school in this city. We have family medicine residents whom the medical director precepts for their pain management training in this facility. He supervised nurse anesthesiologists when he headed the medical department at a local Veterans Administration Hospital. My project site preceptor reviewed the final recommendations and teaching program.

Regarding the continuation of this project beyond the DNP doctoral project, I wish to explore how to improve the self-management of chronic low back pain through the nursing phenomenology research methods. The strengths of this project are its feasibility and cost-effectiveness. It was easy to perform without disrupting the workflow. Per the administrator, the PACIC survey was user- and patient-friendly and was self-administered by the patients. The survey questions were well organized for easier and faster data analysis. The only limitation is the cost of printing paper and ink. The project site is planning to make these forms available on its website so that patients can anonymously complete them in the comfort of their homes.

A strength of this DNP doctoral project is the opportunity to improve on my leadership skills. The DNP Essential II is the cornerstone of this project. DNP graduates possess the organizational and systems leadership skills needed for the improvement of patient and healthcare outcomes. The limitation is that this was only one practice setting in the Midwest United States and may not represent all pain management clinics or populations.

My involvement in the improvement of the effect of this pain clinic's practice policies on its chronic low back pain management outcomes, through the analysis and synthesis of the de-identified patients' assessment of chronic illness care data from chronic low back pain patients, and the provision of recommendations for improvement is an activity supported by the DNP essential II. The conceptualization of a new care delivery model such as the proposed Nurse-led CLBP self-management preventive program that is based on contemporary nursing science and doable within current organizational, and economic perspectives of this pain management facility is an element of the DNP essential II. Future projects addressing this issue using this methodology should adhere to these ideals.

Section 5: Dissemination Plan

As scholar-practitioners, the doctor of nursing practice (DNP) graduates are charged with the responsibilities of contributing to evidence-based knowledge and the dissemination and integration of evidence-based knowledge into practice and practice guidelines (Walden University, n.d.). The DNP graduates are champions in the promotion of best nursing practice and in publicizing evidence-based knowledge (Ploeg et al., 2010). An evidence-based initiative may be successfully disseminated through several presentation approaches (Walden University, n.d.). The mode of presentation of the project findings and recommendations will be through the PowerPoint presentations. This presentation will be made during the clinic's monthly meeting in which all members of staff (the stakeholders) will attend.

The dissemination of this DNP project findings and recommendations to the broader nursing profession will be through two avenues: the Proquest journal (Proquest, n.d.), and the Pain Management Specialty Practice Group of the American Association of Nurse Practitioners (American Association of Nurse Practitioners, n.d.). The Proquest journal presentation will be through a manuscript written according to the specifications of this journal while the Pain Management Specialty Practice Group of the American Association of Nurse Practitioners will be presented via a poster presentation during an annual conference (American Association of Nurse Practitioners, n.d.).

Analysis of Self

I am a family nurse practitioner with interest in pain management. I have been practicing pain management as an advanced practice nurse in a moderate to high volume, not-for-profit pain management center since March 2016. I am one of the two advanced practice nurses in this facility. My duties include follow-up assessment and planning of care for chronic pain patients. Currently, the DNP program of the Walden University will enable me to function as a scholar-practitioner who will manage projects that produce positive social change. My involvement in the improvement of the effect of this pain clinic's quality improvement initiative on its CLBP management outcomes is an activity that will catapult me into a future filled with opportunities to better the lives of patients with chronic low back, through translational research. The completion of this project, though rewarding, was fraught with challenges such as such as joggling school activities with work. However, I was able to use the Walden University academic resources to achieve the objectives of this scholarly journey.

Summary

This doctoral project was a quality improvement project aimed at addressing the lack of education regarding SM of CLBP in a pain clinic. Inadequate SM of CLBP is associated with increase in the frequency of flare-ups of CLBP, disability, loss of productivity, and increased cost of health care. Nurses have the skills to educate CLBP patients on self-management. Also, nurse-led, CLBP, SM preventive programs can improve patient self-management of pain, reduce medication use, and decrease the number of medical and emergency department visits. The analysis of the PACIC data from CLBP patients treated in this pain clinic revealed that their SM support needs were not met. The recommended evidence-based improvements in the medical model of patient education and counseling and the inclusion of nurse-led patient education on SM of CLBP will lead to better patient outcomes. It is expected that a positive social change would result from the dissemination and widespread implementation of these recommendations.

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Appendix A: Resources Utilized to Find Articles on Self-management of CLBP

Table 3

Resources Utilized to Find Articles on the Self –management of CLBP

Electronic Databases	Research or Professional Organizations	Experts in the field to consult	Books, encyclopedias, handbooks
Cochrane Database of Systematic Reviews	0	0	
CINAHL	Journal of Occupational Rehabilitation; Physiotherapy; Arthritis Care & Research; Central European Journal of Nursing and Midwifery	Snook, S. H; Gavish, L., Barzilay, Y., Koren, C., Stern, A., Weinrauch, L., & Friedman, D. J Oliveira, V. C., Ferreira, P. H., Maher, C. G., Pinto, R. Z., Refshauge, K. m., & Ferreira, M. L. Taha, N. M., Mohamed, N. A., & Abd El-Aziz, N. A.	
Walden Library	Patient Education and Counseling	Shizheng Du, S., Hu, L., Dong, J., Xu, G., Chen, X., Jin, S. Z., & Yin, H.	
ProQuest Nursing & Allied Health Source	Orthopedic Nursing	Burbank, P. M., Reibe, D., Paula, C. A., & Nigg, C;	
MedLine	0	0	
Ovid	0	0	
Joanna Briggs Institute	0	0	
CNAHL MedLine simultaneous search	Pain Management Nursing, Applied Nursing Research Journal of Advanced Nursing, Physiotherapy Canada	Kawi, J; Kawi J; Kawi J; Crowe, M., Whitehead, L., Jo-Gagan, M., Baxter, D., & Panckhurst; Harman, K., MacRae, M., Vallis, M., & Bassett, R.	

Appendix B: *The Search Terms and Criteria*

Table 4

The Search Terms and Criteria

Key words & phrases	Major authors	Inclusion criteria	Exclusion criteria
Exercise, Changing behavior, Transtheoretical model	Burbank, P. M., Reibe, D., Paula, C. A., & Nigg, C.	Changing Exercise behavior, transtheoretical model	Changing behavior in children
Self-management program for chronic low back pain, A systematic review and meta-analysis	Shizheng Du, S., Hu, L., Dong, J., Xu, G., Chen, X., Jin, S. Z., & Yin, H.	Self-management program for chronic low back pain; A systematic review and meta-analysis	Acute low back pain
Self-management, chronic low back pain, qualitative study	Crowe, M., Whitehead, L., Jo-Gagan, M., Baxter, D., & Panckhurst	Self-management, chronic low back pain	Acute low back pain
Self-treatment, chronic low back pain	Gavish, L., Barzilay, Y., Koren, C., Stern, A., Weinrauch, L., & Friedman, D. J	Self-treatment, chronic low back pain	Acute low back pain
Behavioral Change, chronic low back pain, rehabilitation	Harman, K., MacRae, M., Vallis, M., & Bassett, R.	Self-care, Self-management, Physical therapy, Physiatrist	Acute low back pain
Self-Management and Self-management support and chronic Low back pain	Kawi, J.	Self-care, Self-management chronic low back pain	Acute low back pain
Self-Management and Self-management support and chronic Low back pain	Kawi, J.	Self-care, Self-management chronic low back pain	Acute low back pain
Self-Management and Self-management support and chronic Low back pain	Kawi, J.	Self-care, Self-management chronic low back pain	Acute low back pain
Low back pain, Self-Management effectiveness	Oliveira, V. C., Ferreira, P. H., Maher, C. G., Pinto, R. Z., Refshauge, K. m., & Ferreira, M. L	Self-care, Self-management chronic low back pain	Acute low back pain
Self-care guidelines AND low back pain	Snook, S. H.	Self-care, low back pain	Acute low back pain
Adult Patients , Protocol for Chronic low back pain	Taha, N. M., Mohamed, N. A., & Abd El-Aziz, N. A	Implied concepts of self-care and self-efficacy	Acute low back pain

Appendix C: The AACN Levels of Evidence

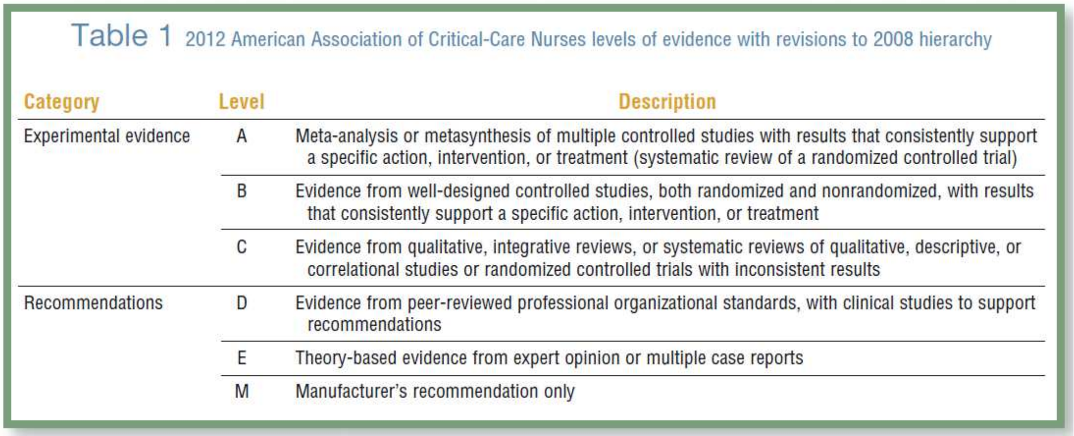


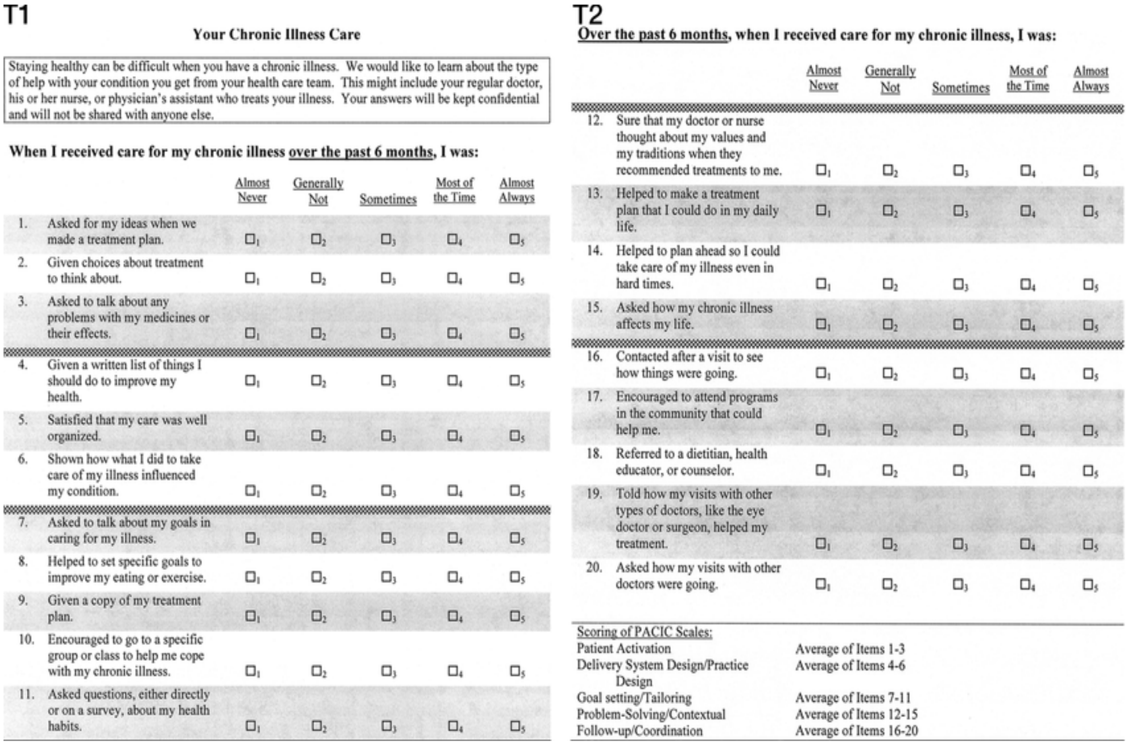
Table 1 2012 American Association of Critical-Care Nurses levels of evidence with revisions to 2008 hierarchy

Category	Level	Description
Experimental evidence	A	Meta-analysis or metasynthesis of multiple controlled studies with results that consistently support a specific action, intervention, or treatment (systematic review of a randomized controlled trial)
	B	Evidence from well-designed controlled studies, both randomized and nonrandomized, with results that consistently support a specific action, intervention, or treatment
	C	Evidence from qualitative, integrative reviews, or systematic reviews of qualitative, descriptive, or correlational studies or randomized controlled trials with inconsistent results
Recommendations	D	Evidence from peer-reviewed professional organizational standards, with clinical studies to support recommendations
	E	Theory-based evidence from expert opinion or multiple case reports
	M	Manufacturer's recommendation only

Free access doc., reproduced from: Peterson, M. H., Barnason, S., Donnelly, B., Hill, K., Miley, H., Riggs, L., et al. (2014). Choosing the Best Evidence to Guide Clinical Practice: Application of AACN Levels of Evidence. *Critical Care Nurse, 34*(2), 58-68).

Figure 3. The American Association of Critical-Care Nurses Levels of Evidence

Appendix D: The Patient Assessment of Chronic Illness Care Tool



T1

Your Chronic Illness Care

Staying healthy can be difficult when you have a chronic illness. We would like to learn about the type of help with your condition you get from your health care team. This might include your regular doctor, his or her nurse, or physician's assistant who treats your illness. Your answers will be kept confidential and will not be shared with anyone else.

When I received care for my chronic illness over the past 6 months, I was:

	Almost Never	Generally Not	Sometimes	Most of the Time	Almost Always
1. Asked for my ideas when we made a treatment plan.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
2. Given choices about treatment to think about.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
3. Asked to talk about any problems with my medicines or their effects.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
4. Given a written list of things I should do to improve my health.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
5. Satisfied that my care was well organized.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
6. Shown how what I did to take care of my illness influenced my condition.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
7. Asked to talk about my goals in caring for my illness.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
8. Helped to set specific goals to improve my eating or exercise.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
9. Given a copy of my treatment plan.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
10. Encouraged to go to a specific group or class to help me cope with my chronic illness.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
11. Asked questions, either directly or on a survey, about my health habits.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$

T2

Over the past 6 months, when I received care for my chronic illness, I was:

	Almost Never	Generally Not	Sometimes	Most of the Time	Almost Always
12. Sure that my doctor or nurse thought about my values and my traditions when they recommended treatments to me.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
13. Helped to make a treatment plan that I could do in my daily life.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
14. Helped to plan ahead so I could take care of my illness even in hard times.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
15. Asked how my chronic illness affects my life.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
16. Contacted after a visit to see how things were going.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
17. Encouraged to attend programs in the community that could help me.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
18. Referred to a dietitian, health educator, or counselor.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
19. Told how my visits with other types of doctors, like the eye doctor or surgeon, helped my treatment.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$
20. Asked how my visits with other doctors were going.	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$

Scoring of PACIC Scales:

Patient Activation	Average of Items 1-3
Delivery System Design/Practice Design	Average of Items 4-6
Goal setting/Tailoring	Average of Items 7-11
Problem-Solving/Contextual	Average of Items 12-15
Follow-up/Coordination	Average of Items 16-20

Free access doc., reproduced from: Glasgow, R. E., Wagner, E. H., Schaefer, J., Mahoney, L. D., Reid, R. J., & Greene, S. M. (2005). Development and Validation of the Patient Assessment of Chronic Illness Care (PACIC). *Medical Care, 43*(5), 436-444.

Figure 4. The Patient Assessment of Chronic Illness Care Tool

Appendix E: *The PACIC Scale Constructs*

Table 5

The PACIC Scale Constructs

Scale	Definitions
Patient Activation (Items 1-3)	Actions that solicit patient input and involvement in decision making
Delivery System Design/Decision Support (Items 4-6)	Actions that organize care and provide information to patients to enhance their understanding of care
Goal Setting/Tailoring (Items 7-11)	Acquiring information for and setting specific collaborative goals.
Problem-Solving/Contextual (Items 12-15)	Considering potential barriers and the patient's social and cultural environment in making treatment plans
Follow-up/Coordination (items 16-20)	Arranging care that extends and reinforces office-based treatment, and making proactive contact with patients to assess progress and coordinate care.

Note. From Glasgow, R. E., Wagner, E. H., Schaefer, J., Mahoney, L. D., Reid, R. J., & Greene, S. M. (2005). Development and Validation of the Patient Assessment of Chronic Illness Care (PACIC). Medical Care, 43(5), 436-444.(Within Public Domain).

Appendix F: *The Clinic's Weekly Pain Control Class Schedule*

Table 6

The Clinic's Weekly Pain Control Class Schedule

	Book Sections	Topics	Pages
Week1	Self-assessment of chronic back pain	Includes course ground rules	Pages 3 -12
	Understanding back pain for effective self-care - I	1)Causes of back pain 2) Anatomy of low back pain 3) Common causes of low back pain	Pages 15-32
Week 2	Understanding back pain for effective self-care - II	1)How the brain controls pain sensation 2) how the brain perceives pain 3 Role of the limbic system	Pages 33 to 38
Week 3	Understanding back pain for effective self-care - III	1)Reversing the downward spiral of back pain	Pages 39 to 43
Week 4	Effective self-care I	Effectively Manage Your Back Pain	Pages 47 to 52
Week 5	Effective self-care II	Managing Flare ups and Emergencies	Pages 53 to 56
Week 6	Treatment for back pain I	1)Working with doctors and other health professional 2 Medicines for controlling back pain	Pages 59-74
Week 7	Treatment for back pain II	1)Physical Methods of Pain Control 2) Pain control through mind-body techniques	Pages 75 to 95
Week 8	Treatment for back pain II	1)Handling the effects of pain on thoughts and emotions 2)Recognizing Depressive Illness when you have back pain.	Pages 97 to 110
Week 9	Physical Activity and Exercise I	1)A Balanced Approach to Physical Activity 2)Posture and Body Mechanics 3)Stretch to prevent pain and Stiffeness.	Pages 113-152
Week 10	Physical Activity and Exercise II	1)Exercises for building strength and endurance 2) Aerobic Activities 3) Staying Active	Pages 153-174
Week 11	Everyday Insights for better living I	1)Solutions for Sleep Problems 2)Strengthening Relationships 3) Intimacy and Sex	Pages 177-198
Week 12	Everyday Insights for better living I	Back Pain and Your Job	Pages 199-205

Appendix G: SPAASMS Score Card

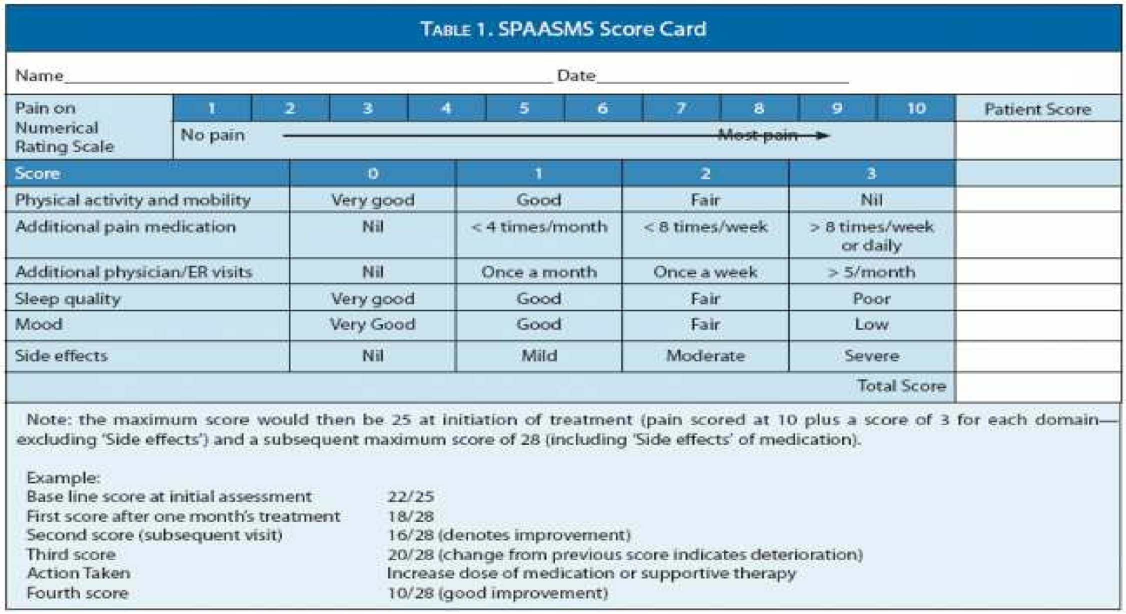


TABLE 1. SPAASMS Score Card

Name______________________________________ Date______________________

Pain on Numerical Rating Scale	1	2	3	4	5	6	7	8	9	10	Patient Score
	No pain							Most pain →			

Score	0	1	2	3	
Physical activity and mobility	Very good	Good	Fair	Nil	
Additional pain medication	Nil	< 4 times/month	< 8 times/week	> 8 times/week or daily	
Additional physician/ER visits	Nil	Once a month	Once a week	> 5/month	
Sleep quality	Very good	Good	Fair	Poor	
Mood	Very Good	Good	Fair	Low	
Side effects	Nil	Mild	Moderate	Severe	
				Total Score	

Note: the maximum score would then be 25 at initiation of treatment (pain scored at 10 plus a score of 3 for each domain—excluding 'Side effects') and a subsequent maximum score of 28 (including 'Side effects' of medication).

Example:

Base line score at initial assessment	22/25
First score after one month's treatment	18/28
Second score (subsequent visit)	16/28 (denotes improvement)
Third score	20/28 (change from previous score indicates deterioration)
Action Taken	Increase dose of medication or supportive therapy
Fourth score	10/28 (good improvement)

Figure 5. SPAASMS Score Card

Appendix H: AHRQ Back Pain Resource

Noninvasive Treatments for Low Back Pain

A Summary of the Research for Adults

AHRQ
Agency for Healthcare Research and Quality

Effective Health Care Program

What is the source of this information?

This information comes from a research report that was funded by the Agency for Healthcare Research and Quality, a Federal Government agency.

Researchers looked at 156 research studies on noninvasive treatments for low back pain. The studies were published before April 2015. Health care professionals, researchers, experts, and the public gave feedback on the report before it was published.

You can read the full report at *www.effectivehealthcare.ahrq.gov/low-back-pain.*

Understanding Your Condition

What is low back pain?

Low back pain may be dull and aching or sharp and stabbing. The pain may be mild or severe, and you may feel tingling or burning. You may also have pain in your legs.

You may feel stiff, and it may be hard to stand up straight or move your lower back. Low back pain can make it hard to do your daily activities.

- Acute low back pain lasts for 4 weeks or less.
- Subacute low back pain lasts between 4 weeks and 12 weeks.
- Chronic low back pain lasts for 12 weeks or longer.

Often, it is hard to know the exact cause of low back pain. There are many possible causes. One possible cause is a strain or tear in the muscles or ligaments that support your back. Low back pain can also be caused by a muscle spasm in your back.

Your health care professional may talk with you about your history of low back pain and may do a physical exam. Both can help rule out any serious conditions that may be causing your low back pain (such as cancer or an infection of the spine or kidneys).

Low back pain is a common problem. Out of every 10 people in the United States, at least 8 will have low back pain at some time in their lives.

Understanding Your Options

How is low back pain treated?

There are many treatment options for acute, subacute, and chronic low back pain.

- **Medicine:** Your health care professional may suggest a medicine to reduce pain and swelling or to relax your muscles.
    - Most medicines are taken by mouth, but some are given as a shot or through an IV (intravenous) tube in your arm.
    - Some medicines are available over the counter, and for some you need a prescription.
- **Nonmedicine treatments:** Your health care professional may also suggest nonmedicine treatments such as heat, exercise, or massage.

Low back pain often improves in 4 weeks or less. In some cases, it may take 12 weeks or more for low back pain to improve. For many people, low back pain improves without specific treatment.

The tables below list some treatments for acute low back pain (lasts for 4 weeks or less) and subacute low back pain (lasts between 4 weeks and 12 weeks). The tables also list what researchers have found about how well the treatments work to reduce pain. For some (but not all) of the treatments, there is also research on how well the treatments help you return to your daily activities.

Nonmedicine Treatments for Acute and Subacute Low Back Pain

Treatment	About the treatment:	Researchers found:
Heat	■ A hot pack or heat wrap that you put on your back	■ Heat helps to reduce pain and helps you return to your daily activities.
Massage	■ A trained therapist rubs your back using different movements and strokes	■ Massage appears to reduce pain and help you return to your daily activities, but more research is needed to know this for sure.

Medicines for Acute and Subacute Low Back Pain

Type of Medicine	About the medicine:	Researchers found:
NSAIDs (nonsteroidal anti-inflammatory drugs) Examples include celecoxib (Celebrex®), diclofenac (Zorvolex®), ibuprofen (Advil®, Motrin®), meloxicam (Mobic®), naproxen (Aleve®), and piroxicam (Feldene®)	■ A type of medicine to reduce pain and swelling	■ NSAIDs help *a little* to reduce pain.
Muscle Relaxants Examples include baclofen (Lioresal®), carisoprodol (Soma®), and cyclobenzaprine (Amrix®, Flexeril®)	■ A type of medicine to relax muscles and reduce pain	■ Muscle relaxants help to reduce pain.
Pain Relievers Acetaminophen (Tylenol®)	■ A type of medicine to reduce pain **Note:** Acetaminophen (Tylenol®) is different from NSAIDs in that it only reduces pain and does not reduce swelling.	■ Acetaminophen (Tylenol®) *does not* appear to reduce pain, but more research is needed to know this for sure.

The tables that follow list some treatments for chronic low back pain (lasts for more than 12 weeks). The tables also list what researchers have found about how well the treatments work to reduce pain. For some (but not all) of the treatments, there is also research on how well the treatments help you return to your daily activities.

Nonmedicine Treatments for Chronic Low Back Pain

Treatment	About the treatment:	Researchers found:
Acupuncture	■ A trained therapist inserts thin needles into your skin at certain points	■ Acupuncture helps to reduce pain and helps you return to your daily activities.
Multidisciplinary rehabilitation	■ A program that involves both physical treatment (such as physical therapy) and psychosocial treatment (such as talking with a trained therapist)	■ Multidisciplinary rehabilitation helps to reduce pain and may help you return to your daily activities.
Exercise	■ Specific types of exercises, such as those that help make your heart beat fast (such as jogging), increase muscle strength, or stretch your muscles	■ Exercise helps *a little* to reduce pain and may help you return to your daily activities.
Spinal manipulation	■ A trained therapist (such as a chiropractor) or other health care professional uses his or her hands or a device to apply pressure to your back and adjust your spine	■ Spinal manipulation works as well as exercise to reduce pain and help you return to your daily activities.
Yoga	■ An activity in which you hold certain postures, do breathing exercises, and may also meditate	■ Yoga appears to reduce pain and help you return to your daily activities, but more research is needed to know this for sure.
Tai chi	■ An activity that involves certain postures, gentle movements, focusing your mind, breathing, and relaxation	■ Tai chi appears to reduce pain and help you return to daily activities, but more research is needed to know this for sure.
Progressive relaxation	■ A type of therapy in which you tense and relax specific groups of muscles until all the muscles are relaxed	■ Progressive relaxation appears to reduce pain, but more research is needed to know this for sure.
EMG (electromyography) biofeedback	■ A type of therapy in which a machine tracks how you tense the muscles in your back so you can learn how to relax them	■ EMG biofeedback appears to reduce pain, but more research is needed to know this for sure.
Cognitive behavioral therapy	■ A type of therapy in which a trained therapist helps you learn ways to cope better with pain	■ Cognitive behavioral therapy appears to reduce pain, but more research is needed to know this for sure.

Medicines for Chronic Low Back Pain

Type of Medicine	About the medicine:	Researchers found:
NSAIDs (nonsteroidal anti-inflammatory drugs) Examples include celecoxib (Celebrex®), diclofenac (Zorvolex®), ibuprofen (Advil®, Motrin®), meloxicam (Mobic®), naproxen (Aleve®), and piroxicam (Feldene®)	- A type of medicine to reduce pain and swelling	- NSAIDs help to reduce pain.
Antidepressants **SNRI (serotonin and norepinepherine reuptake inhibitor) antidepressants** - Duloxetine (Cymbalta®) **Tricyclic antidepressants** - Examples include amitriptyline (no brand name), desipramine (Norpramin®), imipramine (Tofranil®), and nortriptyline (Aventyl®, Pamelor®)	- A type of medicine made to treat depression but also sometimes used to treat pain **Note:** Some antidepressants may help treat pain. Taking an antidepressant for low back pain does not mean that the problem is in your mind.	- The SNRI antidepressant duloxetine (Cymbalta®) helps *a little* to reduce pain and may help you return to your daily activities. - Tricyclic antidepressants *do not* help to improve pain.
Opioids Examples include tramadol, hydrocodone, hydromorphone, morphine, and oxycodone	- A type of medicine to treat severe pain **Warning:** Opioids can have serious side effects, such as abuse, addiction, and overdose. Overdose can lead to death.	- Tramadol helps to reduce pain in the short term (up to 4 months). - Other opioids help *a little* to reduce pain in the short term (up to 4 months). - Current research does not show that opioids work or are safe in the long term (longer than 4 months).

What about other treatments that are not listed in this summary?
You may hear about other treatments for low back pain than those listed in this summary. If any low back pain treatment interests you, discuss it with your health care professional.

What are possible side effects of medicines to treat low back pain?

The U.S. Food and Drug Administration (FDA) lists the following possible side effects for medicines to treat low back pain. Just because a side effect is possible does not mean you will have it.

Possible Side Effects

NSAIDs (nonsteroidal anti-inflammatory drugs) – Celecoxib (Celebrex®), diclofenac (Zorvolex®), ibuprofen (Advil®, Motrin®), meloxicam (Mobic®), naproxen (Aleve®), and piroxicam (Feldene®)

Possible Side Effects	Warnings
■ Diarrhea ■ Constipation ■ Upset stomach ■ Nausea ■ Pain in the belly ■ Gas ■ Dizziness	■ NSAIDs can increase the risk of serious stomach problems, such as bleeding or ulcers. ■ NSAIDs can increase the chance of having a heart attack or stroke.

Muscle Relaxants – Baclofen (Lioresal®), carisoprodol (Soma®), and cyclobenzaprine (Amrix®, Flexeril®)

Possible Side Effects	Warnings
■ Drowsiness ■ Dizziness ■ Weakness ■ Dry mouth	■ Carisoprodol has a risk of abuse (taking more of the medicine than your health care professional has prescribed) and dependence (feeling like you have to take the medicine and cannot stop). ■ Carisoprodol can cause seizures. ■ Elderly people with liver problems should talk with their health care professional before taking cyclobenzaprine.

SNRI (serotonin and norepinephrine reuptake inhibitor) Antidepressant – Duloxetine (Cymbalta®)

Possible Side Effects	Warnings
■ Nausea ■ Dry mouth ■ Tiredness ■ Constipation ■ Decreased appetite ■ Sweating	■ Duloxetine can increase the risk of suicidal thoughts and behaviors in young adults (ages 18 to 24). ■ It can cause liver damage, seizures, a severe skin reaction, and an increased risk of bleeding. ■ It can also cause a life-threatening reaction called serotonin syndrome. Symptoms include shivering, diarrhea, fever, seizures, and stiff muscles.

Opioids – Tramadol, hydrocodone, hydromorphone, morphine, and oxycodone

Possible Side Effects	Warnings
■ Constipation ■ Nausea ■ Vomiting ■ Dizziness ■ Tiredness ■ Sweating ■ Itching ■ Dry mouth	■ Taking opioids often for pain can lead to misuse, abuse, addiction, and overdose. Overdose can lead to death. ■ Opioids can cause life-threatening breathing problems. People who have breathing or swallowing problems should talk with their health care professional before taking opioids. ■ Taking opioids while pregnant may cause the unborn baby to have a condition called neonatal opioid syndrome. This condition may be life threatening if not treated. ■ Some opioids can cause seizures. ■ Tramadol can cause a life-threatening reaction called serotonin syndrome. Symptoms include shivering, diarrhea, fever, seizures, and stiff muscles.

Making a Decision

What should I think about when deciding about treatment?

You and your health care professional can discuss what might be best to treat your low back pain. Here are some things to think about. Be sure to share your thoughts with your health care professional.

- How does your low back pain affect your daily life?
- What are your goals for treatment?
- Which treatment feels like the best fit for you?
- Which possible side effects of treatment concern you?
- How might the cost of treatment affect your decision?
- How much time do you have to spend on treatment?

Ask your health care professional

- Which treatment do you think may be best for me? Why?
- What may help my low back pain in the short term?
- What may help my low back pain in the long term?
- Might medicine help my low back pain? If so, which one?
- What side effects should I watch for? When should I tell you about them?
- Might nonmedicine treatments help my low back pain?
- How long might it take for the treatment to start working?
- Is there anything else I can try?

Notes:

Source

The information in this summary comes from the report *Noninvasive Treatments for Low Back Pain*, February 2016. The report was produced by the Pacific Northwest Evidence-based Practice Center through funding by the Agency for Healthcare Research and Quality (AHRQ).

For a copy of the report or for more information about AHRQ go to *www.effectivehealthcare.ahrq.gov/low-back-pain.* Additional information came from the MedlinePlus® Web site, a service of the National Library of Medicine and the National Institutes of Health. The site is available at *www.medlineplus.gov.*

This summary was prepared by the John M. Eisenberg Center for Clinical Decisions and Communications Science at Baylor College of Medicine, Houston, TX. People with low back pain gave feedback on this summary.

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www.ahrq.gov

Figure 6. AHRQ Back Pain Resource