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Improving Self-Efficacy in Persons Experiencing Chronic Back Pain

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Improving Self-Efficacy in Persons Experiencing Chronic Back Pain

by

Mechell Smith

A DNP project submitted to the faculty of
Gardner-Webb University Hunt School of Nursing in
partial fulfillment of the requirements for the degree of
Doctor of Nursing Practice

Boiling Springs, NC

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Approval Page

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Abstract

The effects of chronic pain are extensive and negatively impact the health of an individual. Negative impacts of chronic pain include issues with sleep, cognitive processes, mood/mental health, cardiovascular health, relationships, and overall quality of life. Self-efficacy is an important predictor of outcomes associated with persons experiencing chronic pain. The use of technology in healthcare is supported in the literature and is a promising way to enhance self-efficacy of those experiencing chronic pain. An evidenced-based project was conducted at a rehabilitation and pain specialty office in the northeastern part of North Carolina. The project evaluated if text message reminders of recommended activities and strategies to improve back pain affected self-efficacy in individuals experiencing chronic back pain. In conclusion, the evidence-based project indicated the use of text messages can make a difference in the self-efficacy of patients experiencing chronic pain.

Keywords: chronic back pain, self-efficacy, text messaging

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SECTION I

Problem Recognition

According to the National Institutes of Health (2011), chronic pain is defined as any pain lasting more than 12 weeks, whereas acute pain is a normal sensation that alerts one to possible injury and is short-lived. The National Institutes of Health statistics show that 25.3 million Americans suffer from daily pain, and 23.4 million report a lot of pain (Nahin, 2015). The effects of chronic pain are wide-ranging and negatively impact health by causing issues with sleep, cognitive processes, mood/mental health, cardiovascular health, relationships, and overall quality of life. Chronic pain can have significant economic repercussions for patients (Fine, 2011).

Identified Need

Effects of Pain on Cognition

Finan, Goodin, and Smith (2013) examined the current literature and note lack of sleep is correlated with new incidents and worsening of symptoms of chronic pain. Interestingly, the authors also found difficulties with sleep may contribute to the development and maintenance of chronic pain. Alsaadi et al. (2014) found a decrease in sleep quality was strongly related to subsequent pain intensity in patients with low back pain. In a study conducted by the National Sleep Foundation (2015), 57% of Americans have pain causing difficulties with sleep. Greater than 40% of those patients polled who have chronic pain reported difficulties with sleep interfered with their work (National Sleep Foundation, 2015).

Berryman et al. (2014), found current evidence demonstrates a small to moderate impairment in executive function performance in people with chronic pain. The authors

caution there is lack of controls for other factors that could affect the results such as pharmacological agents, sleep, and lack of standardized tests available for executive function. Moriarty, McGuire, and Finn (2011) concluded there was sufficient evidence that pain is associated with impaired cognitive function. The authors suggested that a better understanding of the relationship between pain and cognitive function will help improve treatment outcomes for patients with chronic pain.

Effects of Pain on Mood and Mental Health

The connection between chronic pain and prevalence of mood and mental health issues in patients is well conveyed in the literature. In a study conducted on behalf of the American Pain Foundation (2006) found that 77% of respondents living with chronic pain reported feeling depressed. Ninety-four percent of respondents reported some effects on the impact of pain on day-to-day activities including things such as: having energy, working, enjoying life, romantic/sexual relationships, and relationships with family, and getting along with co-workers, among other things (American Pain Foundation, 2006).

Effects of Pain on Cardiovascular Disease

The relationship between chronic pain and cardiovascular disease is also established in the literature. Researchers found that chronic pain is associated with a higher occurrence of cardiovascular disease. Additionally, the greater the pain intensity, a stronger association is noted with cardiovascular outcomes (Fayaz, Ayis, Panesar, Langford, & Donaldson, 2016).

Effects of Pain on Quality of Life

The impact of chronic pain on quality of life is multi-faceted. Ninety-seven percent of respondents to the Voices of Pain survey reported either a physical or social issue because of their chronic pain, or a combination of two or more issues (American Pain Foundation, 2006). These issues include: difficulty with walking or moving, inability to sleep, feeling depressed, inability to concentrate, strained relationships with family/friends, loss of job or chance for promotion, loss of appetite, and inability to drive. These issues can clearly have negative consequences for the patient and can affect all aspects of their lives. The financial repercussions of chronic pain are also tied in with quality of life.

Setting

The setting was a physiatry practice in rural northeastern North Carolina. While physical rehabilitation is the focus, most the patients treated experience chronic pain. Of the roster of approximately 4,500 patients, approximately 55% were insured by Medicare and Medicaid, 35% by commercial plans and 10% were self-pay. Being in a rural underserved area, access to resources such as mental health and transportation are huge barriers to care.

Scope of Problem

Self-efficacy is an important predictor of outcomes associated with persons experiencing chronic pain. Self-efficacy has been extensively examined in the context of chronic pain. Jackson, Wang, and Fan (2014) evaluated the correlation in self-efficacy and functioning in persons experiencing chronic pain. The study revealed self-efficacy is a key influencer on chronic pain outcomes. Improved self-efficacy has a positive

correlation with improved outcomes, whereas decreased self-efficacy has a negative correlation with chronic pain outcomes (Jackson et al., 2014). In the setting of interest, most of the patients seen are experiencing chronic pain. While a variety of pain medications, including opiates, neuropathic agents, antidepressants, and assorted topical agents are commonly used to treat these patients, alternative therapies are also important treatments employed. Unfortunately, many of the recommended treatments, while widely studied and show positive effects in this patient population, are not covered by insurers, or the patients cannot afford these therapies. In North Carolina, Medicaid will only cover one visit with physical therapy (North Carolina Division of Medical Assistance, 2016, p.20). This leaves the patient to do the therapy on their own which poses a challenge in both ensuring that it is done properly and motivation to even do the therapy in the first place.

Problem Statement

With the current epidemic of increasing opioid use and subsequent unintentional overdoses associated with opioid use, practitioners need to promote the use of alternative therapies to improve management of chronic pain. Alternative therapies include increased activity such as walking, smoking cessation, and weight loss. The use of technology to encourage self-efficacy is one intervention that may be used. The problem statement was: Do text message reminders of recommended activities and strategies to improve back pain affect self-efficacy in individuals experiencing chronic back pain?

Literature Review

There are several strategies described in the literature related to improving pain. A literature review conducted by Takai, Yamamoto-Mitani, Abe, and Suzuki (2015),

reported chronic pain management strategies are adapted from many different theoretical frameworks “such as cognitive behavioral therapy, mind-body approaches, and concepts of self-efficacy” (p. 181). With the widespread use of mobile phones today, incorporating their use in healthcare has recently been explored. Mobile health is on the increase of late and had been successfully used in many disease conditions to improve health outcomes. For instance, health behaviors such as smoking cessation and alcohol intake have been addressed using mobile apps and text messaging (Abroms, Padmanabhan, Thaweethai, & Phillips, 2011; Bastawrous & Armstrong, 2013; Pulman, 2010). Applications for use in chronic disease such as diabetes has also been studied with positive findings (Moore et al., 2014).

The use of technology in healthcare is supported in the literature and is a promising way to enhance self-efficacy of those experiencing chronic pain. There is little evidence in the literature in the use of technology related specifically to chronic pain. However, the literature does suggest positive outcomes in other chronic diseases which could be translated into practice. For instance, Dobson et al. (2015) found that text message-based intervention are useful and support self-management in persons with uncontrolled diabetes.

Guillory et al. (2015) found that the use of simple text messaging in patients experiencing chronic pain resulted in reduced pain perceptions. Study participants also reported decreased interference from pain with day to day activities. Emotional effects were also positively influenced by daily text messaging support messages (Guillory et al., 2015).

Free et al. (2013) investigated the effectiveness of the use of mobile health technology in health behavior change and chronic health management. The authors found that simple text interventions had positive effects on smoking cessation and medication adherence in Human Immunodeficiency Virus. Small benefits in medication adherence and weight loss with text reminders were also noted. The authors note further research in mobile technology interventions and their long-term effects is warranted (Free et al., 2013).

Gap in Literature

Research focused on increasing self-efficacy in persons with chronic pain is lacking. However, a study on older patients with chronic pain with difficulty with self-management activities shows the correlation with higher self-efficacy and being able to perform better than those with lower self-efficacy (Krein, Heiser, Piette, Butchart, & Kerr, 2007). Lack of support programs in place to address the complex needs of the patients with chronic pain contribute to decreased patient self-efficacy, potentially leading to less than optimal outcomes.

SECTION II

Needs Assessment

Identification of Population

The population for this project was patients experiencing chronic back pain in a physiatry practice. Specific inclusion criteria included patients between the ages of 18 and 60. The patients must have been physically able to participate in activities such as exercise. They must also have been able to make dietary changes. Patients not between the ages of 18 and 60, or not physically able to participate in exercise activities, or able to make dietary changes were excluded.

PICOT Statement

This project took place over a period of four weeks. The project evaluated how text messaging reminders affect activities of self-efficacy. The project focused on patients experiencing chronic back pain. The proposed question was: Do text message reminders of recommended activities and strategies to improve back pain affect self-efficacy in individuals experiencing chronic back pain?

Identification of Sponsor and Stakeholders

The evidenced-based project was conducted at a rehabilitation and pain specialty office in the northeastern part of North Carolina. Internal stakeholders consisted of the medical staff, including the medical doctors, nurse practitioner, physician's assistant, medical assistants, and patients. Other important individuals that were vital stakeholders included other providers associated with the care of these patients such as primary care physicians, physical therapists, and mental health providers.

Organizational Assessment

SWOT Analysis

INTERNAL FACTORS	
STRENGTHS (+)	WEAKNESSES (-)
Full endorsement of CEO	No support system for patients
Only pain practice in a twelve county region	Rural area/low income
Comprehensive approach to pain management	Long wait list
Experienced Providers	Busy practice
Great support staff	Vulnerable to staff changes

EXTERNAL FACTORS	
OPPORTUNITIES (+)	THREATS (-)
Time to push for alternate treatments	Possibility of other practices coming to area
Lack of local market competition	Limited staffing
Reduction of opiates	Perceptions of persons with chronic pain
	IRB process delays

Figure 1. SWOT Analysis

Strengths

This project had the full endorsement of the CEO of the company. The practice of interest was the only pain practice within a 12-county region of northeastern North Carolina. A comprehensive approach to pain management is a mainstay of treatment. The practice had four experienced providers with a good reputation in the market. Great support staff were key to the success of the practice.

Weaknesses

Unfortunately, there were no support systems in place for follow up to encourage patient compliance. The practice setting is in rural northeastern North Carolina where many patients are low income and do not have the resources available to afford alternative treatments. There was a long waiting list for new patients to the practice. The setting was a busy practice with little time to devote to extra activities. The practice was vulnerable to staffing changes such as with sickness or job vacancies.

Opportunities

With the new Centers for Disease Control guidelines for chronic pain management, now is a prime time to push for alternative treatments for pain management other than opiates. The lack of local market competition meant that the practice could have a huge influence on the care of the patients within the community. Reduction of opiate use could reduce unintentional overdoses.

Threats

There is always the possibility of other practices coming to the area. The limited staffing resources in both providers and support staff could limit the amount of time the can be dedicated to the project. Unanticipated delays with the Institutional Review Board

(IRB) approval could be a threat to project implementation. Additionally, poor perceptions of those experiencing chronic pain could be a threat.

Available Resources

The project was conducted in a clinic which is the only pain center within a 40-mile radius. In the community, there are four physical therapy practices. The local health department is available to give nutritional coaching to at risk patients. There are several low-cost gyms in the local area, some of which have extended hours to accommodate most schedules.

Desired and Expected Outcomes

The desired outcome was improved patient self-efficacy and ultimately less reliance on opiates to manage pain. It was expected patients would become more involved in their own care and management of pain by taking a more active role in pursuit of pain relief. Increasing activity was the focus of this project. Ultimately, increased collaboration for improvement of overall health status with the health-care provider was encouraged by improvement in self-efficacy.

Team Selection

The president and co-owner of the practice served as the project sponsors. The practice president was a Medical Doctor whom also served as a committee member. She assisted in the guidance of this project. The practice medical providers and medical assistants served as team members. The other providers in the practice were important team members as well and were invaluable by providing input in patient selection. The support staff including medical assistants also played key roles in facilitating the survey

tools the patients received. The Doctor of Nursing Practice (DNP) project chair was a doctoral prepared nurse practitioner who had experience in pain management.

Cost/Benefit Analysis

There was minimal cost associated with this project. The expected staff time commitment per patient was estimated at 20 minutes. Assuming inclusion of 20 patients in the project, this amounts to 400 minutes of staff time at a cost of \$13.50 per hour. The total staff cost was estimated at \$90. The handouts and consent forms were estimated to cost \$40. The pre-paid cellular phone cost was \$50. All costs associated with this project was incurred by the practicum site.

The benefits of improved self-efficacy in chronic back pain are multi-faceted. Improvements in self-efficacy are associated with decreased pain levels and improved functioning (Altmaier, Russell, Kao, Lehmann, & Weinstein, 1993). This results in significantly reduced healthcare costs related to medications and potential development of other disease processes such as obesity and diabetes. Less reliance on pain medications is also an important benefit.

SECTION III

Goals, Objectives, and Mission Statement

Goals

The goal of this project was to enhance self-efficacy in patients experiencing chronic back pain in a physiatry practice. Promotion of self-efficacy should result in improved outcomes for the identified patients. Improved outcomes will result in reduced reliance on pain medications.

Objectives

There were several objectives for this project. The first was to develop a text messaging plan, using and including evidenced-based advice to promote self-efficacy in chronic back pain patients in a physiatry practice. The second was the professional staff in the physiatry practice identified three to four focus areas of health-promotion specific to patients experiencing chronic back pain. Finally, during the intervention period, the patients with chronic back pain will demonstrate improvement in self-efficacy.

Mission Statement

This project was intended to enhance self-efficacy among chronic back pain patients by using text messaging in a physiatry practice. Through text messaging, participants would be prompted to perform activities intended to promote increased activity and functional status. These activities would assist patients to become more active and functional, which are important outcomes in care of patients with chronic pain. These strategies helped the organization meet their strategic priorities, operational goals, and solidify the commitment to the patients they serve.

SECTION IV

Theoretical Underpinning

Dorothea Orem's Theory of Self-Care is the theory that guided this project. The origins of her theory were drawn from her experiences as a nurse (Comley, 1994). It is a theory that is widely applied to educational and clinical situations. The theory assumes people should be self-reliant and responsible for their own care and others in their family needing care. It also states people are distinct individuals. Nursing is described as a form of action and interaction between two or more persons. Successfully meeting universal and developmental self-care requisites is an important component of primary care prevention and ill health (Current Nursing, 2012).

A person's knowledge of potential health problems is necessary for promoting self-care behaviors. Self-care and dependent care are behaviors learned within a socio-cultural context. The theory includes self-care, which is defined as the practice of activities the person initiates and performs on their own behalf in maintaining life, health, and well-being (Current Nursing, 2012). The self-care agency is a human ability to be able to engage in self-care and is conditioned by age, developmental state, and life experiences. Therapeutic self-care is defined as the totality of self-care actions to be performed for some duration to meet self-care requisites by using valid methods and related sets of operations and actions (Current Nursing, 2012).

Self-care requisites are the actions directed towards the provision of self-care. Universal self-care requisites are associated with life processes, and the maintenance of integrity of human structure and functioning and are common to all (Current Nursing, 2012). These include maintenance of sufficient intake of air, water, and food, care

associated with the elimination process, balance between activity and rest, and between solitude and social interaction, prevention of hazards to human life and well-being, and the promotion of human functioning. Developmental self-care requisites are associated with developmental processes or derived from a condition or is associated with an event (Current Nursing, 2012). Health deviation self-care is required in conditions of illness, injury, or disease and includes seeking and securing appropriate medical assistance, being aware of and attending to the effects and results of pathologic conditions, effectively following medically prescribed measures, modification of self-concept in accepting being in a particular state of health and in specific forms of healthcare and learning to live with pathologic conditions (Current Nursing, 2012).

Application of Orem's Theory to Project

While the focus of this project was for patients experiencing chronic back pain, most patients seen in the practice suffer from chronic pain from many different and sometimes multiple etiologies. As a nurse practitioner, an important aspect of caring for patients is assessing the barriers to care that the patients are experiencing. Awareness of patient's financial limitations, literacy level, social situation, self-concept, other medical conditions that can affect self-care, such as co-morbid disease and mental health is very important (Baumann & Dang, 2012). Self-care involves the patient's ability to understand their disease, following medical recommendations, recognizing adverse effects of treatments and reporting them to their medical provider, living with the effects of the disease, and possibly changing their self-concept in adaptation to the chronic disease.

SECTION V

Work Planning

Project Proposal

The proposed question for this evidence-based project was: Do text message reminders of recommended activities and strategies to improve back pain affect self-efficacy in individuals experiencing chronic back pain? The population involved patients experiencing chronic back pain at a rural physiatry clinic in Northeastern North Carolina. The project design was that of an evidenced-based project. The project sample included at least 20 patients in the practice experiencing chronic back pain between the ages of 18 and 65.

Project Design

Potential participants within the evidenced-based project were identified from the practice by the Doctoral student, who is a Certified Family Nurse Practitioner. The Doctoral student was the provider seeing the patient determining if he or she meet the inclusion criteria and were capable of doing the suggested activities. Potential participants were invited to participate in the project. Informed consent was obtained from all participants prior to beginning the project interventions by the Doctoral student. Once the patient signed the consent, he or she was administered the pre-intervention Pain Self-Efficacy Questionnaire (PSEQ). The PSEQ is a 10-item questionnaire containing questions regarding patient's beliefs on self-efficacy in patients experiencing chronic pain. The questionnaire was expected to take 10 to no more than 20 minutes to complete. The Doctoral student gave the PSEQ to the patients willing to participate in the project, and then left the room while the patient completed it. Once 20 participants agreed to

participate, the text message interventions took place. The text messages consisted of suggested activities proven to reduce back pain (see Appendix A for the specific text messages sent). The text messages were sent over four weeks with participants receiving one text message a day for five days each week. The text messages were sent using a pre-paid phone with text message capabilities purchased specifically for this project. The text messages were sent individually to each patient to ensure confidentiality by protecting each individual's phone number. After four weeks of text message interventions, the PSEQ was to be administered at the patient's next office visit, within one to two weeks after the conclusion of receiving the final text messages. The results were then evaluated and compared to the pre-intervention results. The participants were able to opt out of the project at any time with no penalty or consequence by replying "Stop" to the text messages.

Project Management Tools

GANTT Chart and Timeline

The problem identification took place in January 2017. A needs assessment was performed in February and March of 2017. Development of the goals, objectives, and mission statement was completed in April 2017. Research and relating the evidence-based project to the theoretical underpinnings occurred in April and May 2017. The project and work planning was developed in May and June 2017. Evaluation planning and obtaining project approvals from both the University and the practice site occurred in May through August 2017. Implementation of the project took place in September through December 2017. Data interpretation took place from December 2017 through

February 2018. Dissemination and reporting of the results took place January through April 2018. (See Figures 2-3)

Task Name	Start	End	Duration (days)	% Complete	Status
Problem Identification	1/1/17	1/23/17	54	100	Complete
Needs Assessment	2/23/17	3/26/17	31	100	Complete
Goals, Objectives and Mission Statement	3/26/17	4/17/17	22	100	Complete
Theoretical Underpinnings	4/17/17	5/14/17	27	100	Complete
Project/Work Planning	5/14/17	6/4/17	21	100	Complete
Evaluation Planning	5/14/17	6/4/17	21	100	Complete
Project Approval CRPS	5/14/17	6/4/17	21	100	Complete
Project Approval GWU	5/14/17	8/31/17	109	100	Complete
Project Implementation	9/11/17	11/5/17	55	100	Complete
Data Interpretation	12/15/17	2/11/18	97	20	Complete
Dissemination/Reporting Results	1/1/18	4/15/18	104	10	In Progress

Figure 2. Time Line

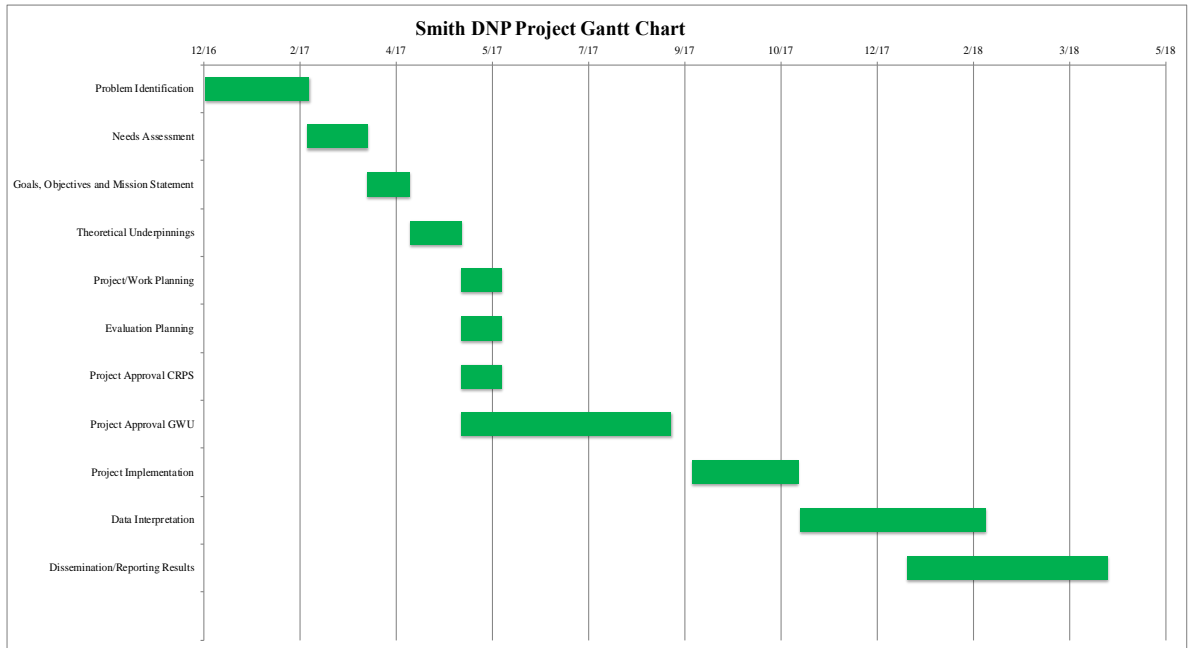


Figure 3. Gantt Chart

SECTION VI

Evaluation Planning

The goal of this project was to improve self-efficacy in individuals experiencing chronic back pain. The PSEQ (Appendix B) was used to record the participants' self-efficacy both before and after the four-week text message interventions. This evidenced-based survey was used to measure how confident patients experiencing chronic pain believe they can function in spite of the pain (Tonkin, 2008). Although the project involved a small sample, the survey indicated some positive changes related to back pain self-efficacy. These positive changes supported the goal of improving self-efficacy in individuals experiencing chronic back pain. As demonstrated in the post-intervention survey, 82% of participants in the intervention made at least one positive change toward back pain self-efficacy. These positive changes could ultimately support better outcomes including increased function and reduction of opiate use, although these outcomes were not specifically evaluated in this project. The findings of this evidenced-based project indicated that increased communication through technology such as text messages could improve back pain self-efficacy knowledge and ultimately lead to improved self-efficacy behaviors. (Figure 4)

Logic Model

Outcomes						
Inputs	Constraints	Activities	Outputs	Short Term	Long Term	Impact
Staff	Timeframe	Patient recruitment	Number of participants in project	Improved level of functioning	Improved self-efficacy	Improved functioning
Financial	Existing Culture	Develop processes			Reduction of opiate use	Improved self-efficacy
Time						
Materials						Reduction of opiate use
Facility						

Figure 4. Logic Model

Quality Improvement Methods

The Plan, Do, Study, Act (PDSA) model of quality improvement was utilized in the process of this project. Project planning included identifying the need for improving self-efficacy in persons experiencing chronic back pain. An evaluation of the effects of pain on cognition, mood and mental health, cardiovascular disease, and quality of life was performed. Defining the scope of the problem and reviewing the literature helped in development of the project plan. Implementation took place after Institutional Review Board (IRB) approval was obtained. After implementation of the project, the results were studied using both formative and summative evaluations. Based on the evaluation of the results, improvements and changes to the intervention were made to enhance the outcomes for the patient population it will be used for.

SECTION VII

Implementation

Institutional Review Board (IRB) Approvals

No Institutional Review Board (IRB) approval was needed from the project site for implementation. However, the Doctoral student did seek and receive a letter of permission to carry out the project at the facility from the President. An IRB application was completed and fully approved by the University.

Implementation

The Doctoral student, who is a Certified Family Nurse Practitioner, evaluated patients over a period of seven days to determine if they met the inclusion criteria, were capable of doing the suggested activities, and asked the patient if they were willing to participate in the study. A total of 85 patients were evaluated for inclusion in this study. Informed consent was obtained from all participants prior to beginning the project interventions by the Doctoral student. Once the participants agreed to participate and signed the consent, the PESQ was administered by the Doctoral Student. Once 20 participants agreed to participate, the text interventions took place. The texts were sent over four weeks with participants receiving one text message a day for five days each week. Some examples of the texts include: “Always stretch before exercise or other strenuous physical activity” (National Institutes of Health, 2014) and “Sit in a chair with good lumbar support and proper position and height for the task. Keep shoulders back” (National Institutes of Health, 2014). The texts were sent using a pre-paid phone with text capabilities purchased specifically for this project. The texts were sent individually to each patient to ensure confidentiality by protecting each individual phone number.

After the conclusion text interventions, the PSEQ was administered at the patient's next office visit. Additionally, at that visit, each participant was asked how many days they completed the suggested activities (Appendix C).

SECTION VIII

Results

A total of 17 participants completed the text message interventions with a completion rate of 85%. There were two participants who opted out of the evidenced-based project after only two text messages. One participant did not provide a valid cell phone number, therefore did not receive any of the text messages. Of the 17 participants, the majority (seven) of the participants completed the suggested activities three to four days of each week during the text message interventions. Five completed the activities four to five days of each week, four completed the activities one or two days of the week, and one participant completed the suggested activities six to seven days each week.

Discussion of Results

The Pain Self-Efficacy Questionnaire items were compared pre and post intervention. Results for the individual items are displayed in Table 1 and showed that there were no items that had a significant increase from pre to post intervention (see Table 1). However, 82% of participants demonstrated improvement in at least one of the ten self-efficacy measures evaluated such as work, coping with pain, medication use, activity levels, etc. This indicated that use of text messages can make a difference in the self-efficacy of patients experiencing chronic pain.

Table 1

PSEQ Statistical Results. Significance (Sig) equals the p-value.

Item	Pre Median	Post Median	Sig
I can enjoy things, despite the pain.	3.70	3.76	0.893
I can do most of the household chores (e.g. tidying-up, washing dishes, etc.), despite the pain.	3.70	3.53	0.747
I can socialize with my friends or family members as often as I used to do, despite the pain.	3.35	3.65	0.556
I can cope with my pain in most situations.	3.40	3.47	0.896
I can do some form of work, despite the pain. ("work" includes housework, paid and unpaid work)	3.15	3.24	0.881
I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite pain.	3	3.06	0.908
I can cope with my pain without medication.	1.55	1.41	0.814
I can still accomplish most of my goals in life, despite the pain.	2.85	2.65	0.713
I can live a normal lifestyle, despite the pain.	2.65	2.41	0.667
I can gradually become more active, despite the pain.	2.60	2.82	0.690

Limitations

The small sample size was a limitation to this project. If repeated, one should consider increasing the number of participants. Additionally, the measurement tool utilized had a small scale, therefore small increases in the post-intervention scores would not make a significant difference. A larger sample size would be needed to show these improvements.

The planned project design was to administer the post text intervention PSEQ within a week or two after the conclusion of the text messages. However, due to various reasons including rescheduled appointments, missed appointments and other scheduling issues, some of the post intervention surveys were not completed for several weeks. In some cases, greater than one month elapsed before the post-intervention survey was completed.

Recommendations for Improvement

Due to the post-survey scheduling issues, it is recommended to change the design of the project to shorten the time after the interventions. This could be accomplished by mailing the post-survey to participants with a self-addressed stamped envelope. This would shorten the time, so that the interventions are still fresh in participants' minds.

Implications for Practice

Doctoral nurses play an integral role in improving the care of patients navigating the healthcare arena with their expertise and experience in translating research into practice (Smith, 2017). This project utilized evidence to develop an intervention that demonstrated some improvement in back pain self-efficacy. The evaluation of the data indicated positive changes among 14 of the 17 participants regarding back pain self-efficacy. Due to the small sample size, the data collected during this evidence-based project did not provide statistical significance. However, the improvements that were demonstrated showed potential that the use of text messages may be a valuable tool in assisting patients in improving self-efficacy in the future. Further investigation in the use of text messages to improve patient self-efficacy in patient's experiencing back pain is indicated.

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Appendix A

Text Messages

1. Following any period of prolonged inactivity, a regimen of low-impact exercises is advised (National Institutes of Health, 2014). For more information on low impact exercises to reduce lower back pain click here:
<https://www.spineuniverse.com/conditions/back-pain/low-back-pain/best-exercises-low-back-pain> (Kolettis, G. & Malagna, G., n. d.).
2. Speed walking, swimming, or stationary bike riding 30 minutes daily can increase muscle strength and flexibility (National Institutes of Health, 2014).
3. Yoga can help stretch and strengthen muscles and improve posture (National Institutes of Health, 2014). For more information on yoga poses to help lower back pain click here: <https://www.yogajournal.com/poses/anatomy/lower-back> (Yoga Journal, 2017).
4. Always stretch before exercise or other strenuous physical activity (National Institutes of Health, 2014).
5. Don't slouch when standing or sitting. The lower back can support a person's weight most easily when the curvature is reduced. When standing, keep your weight balanced on your feet (National Institutes of Health, 2014).
6. At home or work, make sure work surfaces are at a comfortable height (National Institutes of Health, 2014).
7. Sit in a chair with good lumbar support and proper position and height for the task. Keep shoulders back (National Institutes of Health, 2014).

8. Switch sitting positions often and periodically walk around or gently stretch muscles to relieve tension (National Institutes of Health, 2014).
9. A pillow or rolled-up towel placed behind the small of the back can provide some lumbar support (National Institutes of Health, 2014).
10. During prolonged periods of sitting, elevate feet on a low stool or a stack of books (National Institutes of Health, 2014).
11. Wear comfortable, low-heeled shoes (National Institutes of Health, 2014).
12. Sleeping on one's side with the knees drawn up in a fetal position can help open up the joints in the spine and relieve pressure by reducing the curvature of the spine. Always sleep on a firm surface (National Institutes of Health, 2014).
13. Don't try to lift objects that are too heavy. Lift from the knees, pull the stomach muscles in, and keep the head down and in line with a straight back. When lifting, keep objects close to the body. Do not twist when lifting (National Institutes of Health, 2014).
14. Maintain proper nutrition and diet to reduce and prevent excessive weight gain, especially weight around the waistline that taxes lower back muscles (National Institutes of Health, 2014). For more information on a healthy diet to reduce back pain click here:

<http://www.clevelandclinicwellness.com/conditions/BackPain/Pages/TheHealthyBackDiet.aspx> (Ketteler, J., 2010).
15. A diet with sufficient daily intake of calcium, phosphorus, and vitamin D helps to promote new bone growth (National Institutes of Health, 2014). For more information on a healthy diet to reduce back pain click here:

<http://www.clevelandclinicwellness.com/conditions/BackPain/Pages/TheHealthyBackDiet.aspx> (Ketteler, J., 2010).

16. Quit smoking. Smoking reduces blood flow to the lower spine, which can contribute to spinal disc degeneration (National Institutes of Health, 2014). For more information on quitting smoking click this link:
https://www.cdc.gov/tobacco/campaign/tips/quit-smoking/?gclid=Cj0KCQjwnubLBRC_ARIsAASsNNmCu_t8dQsepBIaEiN-Xp2QhyRkw29ta5-MjSGx4TboipyCPtPMyoMaAjVZEALw_wcB (Centers for Disease Control and Prevention, 2017).
17. Smoking increases the risk of osteoporosis and impedes healing. Coughing due to heavy smoking also may cause back pain (National Institutes of Health, 2014).
18. To promote good posture when sitting, choose a chair that supports your spinal curves (Mayo Clinic, 2017).
19. Remove your wallet or cellphone from your back pocket when sitting to prevent putting extra pressure on your buttocks or lower back (Mayo Clinic, 2017).
20. Try to alternate physically demanding tasks with less demanding ones (Mayo Clinic, 2017).

Appendix B

Pre-Intervention Survey

PAIN SELF EFFICACY QUESTIONNAIRE (PSEQ)

M.K.Nicholas (1989)

NAME: _____ DATE: _____

Please rate how confident you are that you can do the following things at present, despite the pain. To indicate your answer circle one of the numbers on the scale under each item, where 0 = not at all confident and 6 = completely confident.

For example:

0	1	2	3	4	5	6
Not at all Confident						Completely confident

Remember, this questionnaire is not asking whether or not you have been doing these things, but rather how confident you are that you can do them at present, despite the pain.

1. I can enjoy things, despite the pain.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

2. I can do most of the household chores (e.g. tidying-up, washing dishes, etc.), despite the pain.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

3. I can socialise with my friends or family members as often as I used to do, despite the pain.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

4. I can cope with my pain in most situations.

0	1	2	3	4	5	6
Not at all Confident						Completely confident

Turn over

5. I can do some form of work, despite the pain. ("work" includes housework, paid and unpaid work).

0 1 2 3 4 5 6
 Not at all Completely
 Confident confident

6. I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite pain.

0 1 2 3 4 5 6
 Not at all Completely
 Confident confident

7. I can cope with my pain without medication.

0 1 2 3 4 5 6
 Not at all Completely
 Confident confident

8. I can still accomplish most of my goals in life, despite the pain.

0 1 2 3 4 5 6
 Not at all Completely
 Confident confident

9. I can live a normal lifestyle, despite the pain.

0 1 2 3 4 5 6
 Not at all Completely
 Confident confident

10. I can gradually become more active, despite the pain.

0 1 2 3 4 5 6
 Not at all Completely
 Confident confident

Appendix C

Post-Intervention Days Activities Performed Question

How many days during the week did you perform the suggested activities? (Circle the best answer)

0 days

1-2 days

3-4 days

4-5 days

6-7 days