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Increasing Knowledge of Fibromyalgia Diagnostic Criteria Using a Screening Tool in Primary Care

Diane Morris

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INCREASING KNOWLEDGE OF FIBROMYALGIA DIAGNOSTIC CRITERIA
USING A SCREENING TOOL IN PRIMARY CARE

by

Diane Morris

A Doctoral Project
Submitted to the Graduate School,
the College of Nursing and Health Professions
and the School of Leadership and Advanced Nursing Practice
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Nursing Practice

Approved by:

Dr. Lisa Morgan, Committee Chair
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ABSTRACT

Fibromyalgia (FM) is a chronic pain condition that is second only to osteoarthritis. Fibromyalgia greatly impacts the quality of life with its many symptoms requiring a multidisciplinary approach to treatment. The recommendation is that patients with fibromyalgia are treated in primary care as are other chronic diagnoses such as hypertension and diabetes with referrals to other disciplines as needed. However, some primary care providers may not recognize fibromyalgia as a valid diagnosis, have received inadequate formal training in fibromyalgia, and may have limited awareness of diagnostic criteria.

According to the research, there are as many as 3 out of 4 people with fibromyalgia that go undiagnosed in any primary care practice. Providers in primary care are usually the first to evaluate patients, therefore, providers in primary care need to recognize fibromyalgia symptoms, start initial treatment, and refer for further consultation if required. Fibromyalgia (FM) symptoms can be debilitating, prolonged, and negatively affect the patient's lives, environment, and family and friends. Decreases in physical ability, intellectual activity, emotional condition are some of the consequences of FM. Professional careers, personal relationships, and mental health may require, requiring several strategic interventions by several disciplines in healthcare settings. Making the need for the use of a screening tool that includes the diagnostic criteria essential. Fibromyalgia occurs frequently in the general adult population worldwide, no treatment that cures, and limited knowledge of the cause has produced patient dissatisfaction with the time it takes to diagnose, formulate a treatment plan, and as a result, has led to the development of this DNP project. Given fibromyalgia

symptomatology, absenteeism from work with a decreased quality of life, and the inability it often produces, it is essential that providers, especially in primary care, be knowledgeable regarding the diagnostic criteria for FM using a screening tool. Using the American College of Rheumatology (ACR) screening tool will assist in early diagnosis and treatment. The screening tool consists of symptom severity (SS) and widespread pain index (WPI), with no curative diagnostic screening which aids in early diagnosis and treatment of fibromyalgia.

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TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGMENTS	iv
LIST OF TABLES	viii
LIST OF ABBREVIATIONS	ix
CHAPTER I - INTRODUCTION	1
Background	2
Significance	2
Problem Statement, Clinical Question, and PICOT	3
Available Knowledge	4
Needs Assessment	6
Synthesis of Evidence	9
Search	15
Focused Topics and Evidence-Based Findings	16
Rationale, Theoretical Framework, Models, Concepts/Theories	19
Lewin's Change Theory Applied	21
Specific Aims	21
Doctor of Nursing Practice Essentials	22
Summary	24
CHAPTER II - METHODOLOGY	26

Population and Sample	26
Intervention	26
Measures	27
Analysis.....	28
Ethical Considerations	28
Project Timeline.....	30
Summary	31
CHAPTER III – RESULTS	32
Results from Retrospective Chart Review	32
Results from the Pre-Education Questionnaire.....	33
Results from the Post-Education Questionnaire	34
Summary	34
CHAPTER IV – DISCUSSION.....	35
Strengths and Limitations of the Project.....	35
Key Findings.....	35
Impact of the DNP Project.....	35
Summary	36
Conclusion	36
APPENDIX A – Clinical Diagnostic and Severity Criteria for Fibromyalgia: Widespread Pain Index (WPI) and Symptom Severity (SS) Scale	37

APPENDIX B – Pre- and Post-Questionnaires.....	38
APPENDIX C – Doctor of Nursing Practice Essentials	39
APPENDIX D – Synthesis of Evidence.....	41
APPENDIX E – ACR Preliminary Diagnostic Criteria for Fibromyalgia.....	49
APPENDIX F – IRB Approval Letter	52
REFERENCES	53

LIST OF TABLES

Table 1 Pre-Educational Findings.....	33
Table 2 Post-Educational Findings	34

LIST OF ABBREVIATIONS

<i>ACR</i>	American College of Rheumatology
<i>CFS</i>	Chronic Fatigue Syndrome
<i>CSM</i>	Common Sense Model of Self-Regulation
<i>CWP</i>	Chronic Widespread Pain
<i>DNP</i>	Doctor of Nursing Practice
<i>ER</i>	Emergency Room
<i>FIQ</i>	Fibromyalgia Impact Questionnaire
<i>FM</i>	Fibromyalgia
<i>ICD-10</i>	International Classification of Diseases-10 th Revision
<i>IRB</i>	Institutional Review Board
<i>OA</i>	Osteoarthritis
<i>PICOT</i>	Patient, Intervention, Comparison, Outcome, Time
<i>RA</i>	Rheumatic Arthritis
<i>RFIQ</i>	Revised Fibromyalgia Impact Questionnaire
<i>SS</i>	Symptom Severity
<i>SWP</i>	Severe Widespread Pain
<i>USM</i>	The University of Southern Mississippi
<i>WHO</i>	World Health Organization
<i>WPI</i>	Widespread Pain Index

CHAPTER I - INTRODUCTION

Fibromyalgia (FM) is a chronic, complex disease characterized by diffuse chronic mild, moderate, and severe widespread pain (SWP) and chronic fatigue syndrome (CFS), often reported as the worst symptom associated with fibromyalgia (Baron et al., 2014). Other distressing symptoms include sleep disturbances, gastrointestinal symptoms, memory problems, headaches, tingling, stiffness, numbness, decreased libido, bowel, bladder difficulties, anxiety, and depression, an overwhelming length of time. Many debilitating symptoms make it very difficult to diagnose and treat (Baron et al., 2014). The American College of Rheumatology (2021) estimates that about 2% of the world's population meets the 2010 modified diagnostic criteria for fibromyalgia syndrome.

Those patients diagnosed with FM reported that they are never free from symptoms. Wierwille (2011) noticed that the diagnostic goal is to promote treatment early and improve life quality by reducing symptoms. Working with FM patients can become disheartening for providers because of the difficulty in diagnosing and finding an effective and proven treatment that works for their patients. When a person has FM symptoms, many patients have been evaluated by several providers, including specialists and a long list of diagnostic tests, without a definitive diagnosis (Arnold et al., 2011). In most instances, the patient first reports to their provider in primary care without a definitive diagnosis. Therefore, it is essential to educate providers in primary care about the diagnostic criteria provided in a screening tool recommended by ACR (Wolfe et al., 2010).

Background

The most common chronic pain condition is seen in primary care, and the least diagnosed is FM. There are at least twenty undiagnosed FM patients in the average primary care clinic (Wolfe et al., 2010). The American College Rheumatology's (ACR) (2021) recommended tool for diagnosing FM, using the ACR diagnostic criteria screening tools, is the widespread pain index (WPI) and severity of symptoms (SS). This DNP project aimed to educate providers in primary care on the diagnostic criteria tool needed for a definitive diagnosis.

Significance

FM is a controversial condition where this population has seen numerous providers when a definitive diagnosis has been provided. Some of these providers are rheumatologists, general practitioners, pain specialists, and mental healthcare specialists. The FM population may complain of SWP, CFS, depression, intestinal symptoms, headaches, and many other complaints. We now know a complex presentation of symptoms as FM remains challenging to providers due to the multifaceted list of symptoms.

The most common chronic pain condition is seen in primary care is FM and is the least diagnosed. There are at least twenty undiagnosed FM patients in a primary care clinic (Wolfe et al., 2010). The American College Rheumatology's (ACR) (2021) recommended tool for diagnosing FM, using the ACR diagnostic criteria screening tools, is the widespread pain index (WPI) and SS. This DNP project aimed to educate providers in primary care on the diagnostic criteria tool needed for a definitive diagnosis. This DNP project aimed to educate providers in primary care on the diagnostic criteria tool needed

for a definitive diagnosis. For years, disagreements took place over the legitimacy and the need for a diagnostic label. What would be the classification, what division of medicine would take ownership, and what treatment protocols and options would benefit the FM population are just a few of the questions posed by the medical community (Häuser & Fitzcharles, 2018).

Chen and McKenzie-Brown's (2015), research estimated that about 2% of the population meets the 2010 modified diagnostic criteria of the American College of Rheumatology (2021) for fibromyalgia syndrome in the developed world's population. FM occurrence is higher in women, although it also occurs in children and men. All ethnic groups are affected and may affect other family members between the ages of 20 to 50. Incidences of FM rise with age; by age 80, about 8% of the adult population in the world meet the American College of Rheumatology classification of fibromyalgia. Despite these research findings, many providers doubt FM diagnosis and point to depression, pain, or insomnia as the main issues of the FM population (Chen & McKenzie-Brown, 2015).

Problem Statement, Clinical Question, and PICOT

According to a survey conducted by primary care providers, as many as two-thirds of these providers have problems distinguishing FM from other disorders and were not well trained in FM diagnosis (Arnold et al., 2011, p. 8). Providers in primary care manage many complex chronic diseases, and FM diagnosis and treatment should occur in primary care. The FM diagnosis often does not occur due to providers' lack of knowledge regarding FM and there are not any clear guidelines for management. Every FM patient has to be treated as an individual.

There is a significant knowledge gap of providers in primary care settings that causes delays in diagnoses and treatment for those with the complex array of symptoms that accompany FM (Arnold et al., 2016). According to Arnold et al. (2016), research providers who suspect FM will refer to a rheumatologist or other providers to diagnose and provide treatments. The knowledge gap is related to uncertainty, unavailability, or unawareness of the ACR diagnostic criteria screening tool.

Database searches were performed to find evidence-based research on the PICOT question: PICO (T) Question: does educating providers on the availability and use of the ACR preliminary diagnostic criteria screening tool in primary care improve the provider's confidence in their ability to diagnose fibromyalgia in primary care?

Available Knowledge

Management of complex chronic diseases by providers in primary care is routine, and patient referrals as needed for a patient-centered approach to providing care. These same criteria should apply to FM as a chronic disease where education is necessary, is incorporated into treatment goals, and continued follow-up applies. In managing the FM population, the provider must consider more than one treatment goal; treatment is long-term and requires a strategic approach for each person's array of symptoms.

The provider must treat all symptoms to effectively manage the FM population (Arnold et al., 2012). Many providers often avoid FM patients due to the complexity of the illness and later refer to specialists as quickly as possible. The time needed to educate patients regarding FM is not cost-effective. The routine follow-up visits are usually lengthy and may cause diminished reimbursements, increase overhead, and bureaucratic demands. Providers performing a complete medical history, physical examination, using

the ACR diagnostic criteria tool, and blood work to rule out other diseases can quickly diagnose FM in most patients (Fitzcharles et al., 2018).

According to Fitzcharles et al. (2018), FM is a chronic illness with various symptoms. Hence, the FM population needs long-term, continuous care and knows that treatment goals will change over time based on the ongoing evaluation. Almost all care providers in primary care are qualified to manage FM patients, and FM patients should only refer to a rheumatologist, psychiatrist, psychologist, or other specialists if needed (Fitzcharles et al., 2018).

Instead, the new criteria require the examiner to fully assess the patient's concerns and perform a thorough physical examination. It is impossible to know the extent of unrefreshed sleep, fatigue, cognitive issues, and degree of pain without a detailed interview and the use of a diagnostic screening tool as part of the protocol to diagnose FM. The 2010 ACR diagnostic criteria screening tool obligates the provider to focus extensively on the subjective complaints to give a definitive diagnosis of FM (Wolfe, 2010) (see Appendix A).

Galvez-Sánchez and Reyes del Paso (2020) conducted a research study that shows 88.4% sensitivity and specificity of 81.1% using 1990 ACR criteria to screen for FM will differentiate FM from other rheumatic conditions. With rheumatoid arthritis (RA) and osteoarthritis (OA), the ability to distinguish from FM with the sensitivity of 96.6% and the specificity of 91.8% Sánchez and Reyes del Paso (2020). In 2010, the ACR diagnostic criteria for diagnosing FM cut-off value of WPI increased from greater than or equal to 14 from 7 and SS from greater than or equal to 5 to 7 with 100% diagnostic accuracy for FM Galvez-Sánchez and Reyes del Paso (2020).

Furthermore, all patients recruited with the 1990 criteria fulfilled the 2010 criteria, suggesting a good diagnostic agreement between both sets of criteria (Galvez-Sánchez & Reyes del Paso, 2020). When the 2010 ACR criteria cut-off values were maximized up to $WPI \geq 14$ and $SS \geq 7$, specificity and diagnostic accuracy of 100% were achieved (Galvez-Sánchez & Reyes del Paso, 2020). Studies using logistic regression analysis showed that the ability to discriminate between FM and RA patients was higher for the WPI (95.9% overall accuracy) than for the SS (87.1% overall accuracy) (Galvez-Sánchez & Reyes del Paso, 2020).

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Needs Assessment

There are gaps in FM research compared to other chronic illnesses, including diabetes, rheumatoid arthritis, and asthma; thus, this has caused some providers to be far behind in their understanding and therapeutic approaches to FM (Clauw et al., 2017). The ACR published the first diagnostic criteria for classification for FM in 1990, requiring a definitive diagnosis of FM to have at least eighteen of the tender points on the body and widespread pain for at least three months (Wolfe, 2010). This 1990 ACR assessment

evaluates the tenderness points on the body according to defined thresholds. With this assessment, there must be at least eleven tender points of eighteen points and widespread pain for at least three months (Wolfe, 2010). The provider could assess the tender points by applying a standardized pressure of 4 kg to turn a thumbnail white to the tender points, and three months of these symptoms (Wolfe, 2010).

Carol Burckhardt and Sharon Clark at Oregon Health and Science University in Portland, Oregon, published the Fibromyalgia Impact Questionnaire (FIQ) in 1991. The FIQ attempted to teach the spectrum of fibromyalgia problems and therapy responses because fibromyalgia's clinical features were just being discovered. Since that time, it has been extensively used to index disease activity and therapeutic efficacy (Bennett et al., 2009).

However, after two decades, the ACR proposed new criteria in 2010, which removed the Revised Fibromyalgia Impact Questionnaire (RFIQ) tender points. The RFIQ is an updated version of the FIQ with excellent psychometric properties, and can be completed in less than 2 minutes, and is easy to score. The RFIQ has scoring characteristics comparable to the original FIQ, making it possible to compare past FIQ results with future RFIQ results (Bennett et al., 2009).

Research has shown that healthcare providers may overlook rheumatic disorders that have inaccurately been diagnosed as FM. In 2010, the ACR introduced new diagnostic criteria. The new diagnostic criteria require the provider to fully examine the patient's problem list to obtain a clearer path to a definitive diagnosis. This DNP project aims to educate providers on the diagnostic criteria tool's availability and how to use the tool. (Arnold et al., 2011).

This DNP project endeavors to provide data indicating that using the screening tool will improve making definitive diagnoses. The decisions that providers make about diagnosis, treatment, prescribing, referrals, and tests are based on the healthcare provider's knowledge, their confidence in that knowledge, and their experiences using the knowledge. FM is a complex condition in which the population presents with multiple symptoms, where adequate education and diagnostic screening tools must be used with chronic pain patients to give a definitive diagnosis early (Arnold et al., 2010).

Wolfe's (2010) study reveals that the new diagnostic criteria for FM eliminate the tender point examination because, of difficulty to perform for some providers, causing distractions and delays in diagnosing. With the new ACR diagnostic criteria, eleven tender-point exams were removed and replaced with the WPI, providing more information regarding the extent and threshold of pain. Eliminating the tender points exam does not suggest that physical examination is no longer required for patients, nor does the removal of the eleven tender points lighten the provider's role in the diagnosing of FM. Instead, the new criteria require the examiner to fully assess the patient's concerns and perform a thorough physical examination. It is impossible to know the extent of unrefreshed sleep, fatigue, cognitive issues, and degree of pain without a detailed interview, and the use of a diagnostic screening tool as part of the protocol to diagnose FM. The 2010 ACR diagnostic criteria screening tool obligates the provider to focus extensively on the subjective complaints to give a definitive diagnosis of FM (Wolfe, 2010) (see Appendix A).

Synthesis of Evidence

Fibromyalgia FM has a negative and substantial impact on the lives of patients and families. FM can affect the quality of life and dramatically changes the person's ability to independently perform vital personal needs and affect family, friends, and employer's relationships (Arnold et al., 2008). FM may be so debilitating that the person may become incapacitated and unable to work to the point of requiring assistance with activities of daily living. Fibromyalgia is the most common chronic pain condition, second only to osteoarthritis, and worldwide, FM affects all ethnic and medical communities in the same measure. According to the National Fibromyalgia Association (NFA, 2015), FM cost is very costly for individuals and society due to its debilitating nature and multiple symptoms. Hence, the need for early diagnosis and treatment is essential for all stakeholders. The initial plan has to be to identify the diagnosis of FM, start treatment timely and rule out or confirm other comorbidities (Arnold et al., 2008).

A research study conducted by Arnold et al. (2011) found that despite some improvement in understanding the process of FM and its pathologic as many as 3 out of 4 people with FM-like symptoms remain undiagnosed and undertreated. From the beginning of symptoms to the time of diagnosis may take an average of 5 years with potential suboptimal medical care and delay in treatment. Hence, a vital part of successful management is establishing FM's diagnosis early and starting treatment (Arnold et al. 2011). Providers in primary care see more patients with undiagnosed FM than are any other providers (Arnold et al., 2011). When FM is diagnosed, both providers and patients can see a clear path to overcome a significant hurdle to manage the disorder effectively together (Arnold et al., 2011).

Arnold et al. (2011) state the evaluation to diagnose FM may take more time than allowed for a patient routine visit, but providers in primary care should not let this fact be a barrier in their practices. If FM is suspected or confirmed, treatment should begin immediately, and the evaluation has to continue for possible coexisting disorders (Arnold et al., 2011). In this same research study, Arnold et al. (2011) found that improving recognition and diagnosing FM is essential. FM can affect the quality of life and become a burden on the economy due to remaining underdiagnosed as well as undertreated even with increased awareness and interest in the disorder (Arnold et al., 2011).

Migraine headaches and back pain are chronic pain illnesses similar to FM, and as such, it is appropriate for providers in primary care to diagnose and treat FM (Arnold et al., 2011). A research study on the ACR diagnostic criteria screening tool states that the tool will assist with an early diagnosis, treatment and increasing the provider's confidence. Using the ACR diagnostic criteria to diagnose or rule out FM will allow the provider in primary care to explore and make other diagnoses of other diseases with similar symptoms (Arnold et al., 2011).

In practice, primary care providers are often the first health professionals the FM population patients consult regarding their many symptoms causing such poor quality of life (Baron et al., 2014). The ACR recommends that their diagnostic criteria screening tool be used in addition to the patients' symptoms, comorbidities, medical history, and the results of laboratory tests in primary care to establish a diagnosis. Because incorrect diagnosis remains very frequent, patients are likely to undergo multiple consultations and referrals before receiving a positive diagnosis and adequate care management. Delayed or misdiagnosis, along with the condition itself, has a significant impact on a patient's

emotional state and quality of life, society, and health care costs (Baron et al., 2014).

ACR diagnostic criteria are widely available and are very sensitive to confirming FM, but the criteria are rarely used to establish FM diagnosis.

Hence, using the ACR diagnostic criteria screening tool, the primary care provider will translate patients' complaints and experiences into clues to help the provider manage the patient in primary care. Baron et al. (2014), created a scoring method using a series of repeating steps for the process based on statistical and clinical considerations with the American College of Rheumatology called FibroDetect. The study included FM patients and non-FM patients. The FibroDetect tool included fourteen questions assessing patients' pain and fatigue, personal history and attitudes, symptoms, and impact on lives. A FibroDetect tool was found to have a 90% sensitivity and specificity of 67% (Baron et al., 2014). In contrast, the ACR diagnostic screening tools remain the best choice because it has sensitivity and specificity for the criteria to 90.2% and 89.5% (Baron et al., 2014).

Arnold, Gebke, and Choy's (2016) systematic review revealed that for most FM diagnoses to occur in primary care, providers must have the training and access to screening tools and assist with recognizing FM, providing the provider with the confidence needed to identify and diagnose FM. According to Arnold et al. 2016, providers in primary care received little training in basic pain assessment or management of chronic pain. If the appropriate training has been provided to primary care providers, it is too brief to be helpful or remembered. Additional ongoing training is most likely needed for primary care providers and can be obtained by some form of regularly scheduled continuing education on assessing pain and FM (Arnold et al., 2016).

Delay in diagnosing FM might be the lack of knowledge of diagnostic criteria screening or the lack of time allotted for patient visits in primary care is not enough for the FM patient to discuss all of their symptoms. The many symptoms associated with FM have to be discussed and evaluated (Arnold et al., 2016). As patients might on the visitation present with one or two symptoms commonly associated with FM, such as lack of interest in things that once caused pleasure, chronic fatigue syndrome, a provider must be sure to inquire about pain as a part of the assessment even if the patient does not report the pain (Arnold et al., 2016). The ACR diagnostic criteria screening tool could improve diagnostic accuracy, reduce delays in initiating treatment and provide education for the FM patients. Patient education is essential in aiding in the understanding, acceptance, and learning to self-manage FM (Arnold et al., 2016). According to Arnold et al. (2016), the primary care provider's role is unique with the FM patients, and forming a therapeutic relationship between the provider and the patient is necessary to provide needed support for the FM patient. The WPI and SS, part of the ACR preliminary diagnostic screening tool, should be completed at every visit. This will help providers have the subjective information from the patient, Arnold et al. (2016). When the WPI and SS part of the form is completed by the FM patient and reviewed with the patient at each visit by the primary care provider, communication between patients and providers will improve, causing a trustful therapeutic relationship (Arnold et al., 2016).

According to Arnold et al. (2016), the primary care provider is unique and must form a therapeutic relationship that provides support. The use of the ACR diagnostic screening tool at every visit, which consists of scoring of WPI and SS, will also help patients' education. When the form is completed and reviewed with the patient at each

visit, it improves communication between the patient and provider. Poor communication may cause frustration in the patient leading to over-reliance on pharmacological interventions with little benefit.

The ACR diagnostic criteria will provide a guideline for early diagnosing and early treatment for all patients who present with chronic pain. The ACR will also help relieve the provider's insecurities in diagnosing and treating (Arnold et al., 2016). FM is a clinical diagnosis that a primary care provider should make based on the disorder's clinical characteristics (Arnold et al., 2016). Prompt symptom recognition leads earlier, leading to an earlier starting of treatment using the ACR diagnostic criteria screening tool for all patients who present with chronic pain complaints (Arnold et al., 2016).

Bernstein's 2015 article states that in the diagnosis of FM, there is no disease to cure. FM, a complex illness that speaks to overwhelming pervasive symptoms, and often symptoms are more significant than are experienced by patients with organ system diseases such as heart failure and some cancers. The provider's role is not to question or denigrate the patient's motives but to understand the context in which they suffer and comprehend the disease's nature. Since there is no disease to cure, there must be aid and support in times of hardship and distress to address FM's symptoms.

Historically, the concepts about fibromyalgia were incorrect. It was believed that FM was a disease of yes or no. This response is untrue because individuals in this population have different levels or volume control settings for sensory processing in their brains. The higher this volume or level is, the more pain response that comes from the brain. This response causes FM patients to rate their pain as mild, moderate, severe, or

unbearable FM patients and can change daily in severity. Making FM an indistinct disease of fluctuating symptoms (Fitzcharles et al., 2018).

There has been a huge surge in the research studies conducted on FM for the past thirty years. This research surge might be in part to the stakeholders' increase in knowledge and interest, including patients with FM, their families, organizations labeled self-help, the pharmaceutical industry, researchers, and providers (Häuser & Fitzcharles, 2018). Before a condition can be recognized as a disease, the World Health Organization (WHO) must officially recognize it. In 1992, the WHO recognized FM as a disease. In 1994, in the 10th revision of the International Classification of Diseases (ICD-10), FM was listed as a musculoskeletal system disease and connective tissue with ICD 10 code of M79.7 (Häuser & Fitzcharles, 2018).

Despite the legitimacy of FM by WHO, there are healthcare providers that do not believe that FM exists. Many are diagnosed with FM when other providers for other conditions are being told that FM does not exist. This issue is, in part, believed to be because there are not any objective findings to diagnose FM. FM must be diagnosed by subjective data collected from those presenting to see a provider with their many symptoms (Häuser & Fitzcharles, 2018).

According to (WHO), FM is a real disease, a legitimate disease in the pain field, but the literature still shows doubter. FM is the poster child for a common type of pain originating from the brain and central nervous system rather than ongoing tissue damage inflammation. Why is it so difficult for providers to believe that FM pain originates from the brain while we readily accept phantom limb pain and headaches? Many chronic pain

conditions such as fibromyalgia, irritable bowel, TMJ disorder, interstitial cystitis are believed to originate from the brain, not from peripheral tissues.

Just as many other chronic pain syndromes are diagnosed and treated by providers in primary care, so should FM. Some of the discomforts present in diagnosing and treating FM are because the problem deviates from providers' normal training on tissue and organs. FM individuals feel any sensory experiences as more painful and unpleasant than would occur peripherally in those without FM because the problem is that the volume control for sensory processing is higher in the brain (Bernstein 2015).

Search

A systematic, electronically strategic search was conducted to capture the most relevant research for diagnosing FM. An electronic search of databases that included Medline search, EBSCOhost, Cochrane Reviews, and Google Scholar to access peer-reviewed articles. The purpose of the searches was to find peer-reviewed articles related to diagnosing FM in primary care. The terms related to the PICOT questions were searched: primary care, fibromyalgia, chronic pain, evidence-based practice, economic burden, screening tools, protocols, and diagnostic criteria for adults 18 years and above. Because a primary care setting is usually the first appointment that the FM population makes and presents to the provider with multiple symptoms, including CPS, and steadfast health concerns they have had to endure for many years. It is essential to diagnosing FM early by determining whether providers in primary care are aware of the diagnostic criteria tool. If the diagnostic criteria tool is used by providers in the primary care setting to screen for FM in patients with complaints of chronic pain, to ensure that early diagnosis and treatment will occur.

Focused Topics and Evidence-Based Findings

Management of FM in primary care may be challenging for providers even though much evidence-based research about the underlying pathophysiologic mechanisms involved in FM is available. (Fitzcharles et al., 2018). When providers find it challenging to identify and diagnose FM, this prevents them from communicating this information to patients. Despite this, there is a growing recognition of FM by patients with many symptoms, so more people seek medical help and make frequent visits to providers in primary care (Fitzcharles et al., 2018). Thus, FM is a problem commonly seen in primary care that decreases the quality of life and becomes an economic burden. With time and resources limited in primary care clinics, those presenting with multiple symptoms accompanying FM may be perceived as complex, especially since standardized treatment protocols are unavailable (Fitzcharles et al., 2018).

Arnold et al. (2012) report that FM is a chronic disease that significantly affects several parts of a patient's life, including engaging in work and everyday activities, which may lead to some FM patients being perceived as challenging to treat by their providers. However, it is important to assess all areas that are impacted by symptoms of FM and to work collaboratively with the patient in a patient-centered approach during follow-up to prioritize goals for treatments (Arnold et al., 2012). Pain and symptoms of FM may be assessed using the ACR WPI and SS scale. These scales will evaluate and validate pain, cognitive and physical abilities, and other health-related quality of life assessments (Arnold et al., 2012). Using the ACR assessment tools to assist with goal setting when a patient is diagnosed with FM will give the provider a baseline of health status. Progress, decline, or improvements can be monitored at each visit using this tool (Arnold et al.,

2012). Other tools are available that providers may use to assess the impact of FM on patients'. The Fibromyalgia Impact Questionnaire (FIQ) and the revised version (RFIQ). The RFIQ considers three areas: function, effect, symptoms; it takes less than 2 minutes to complete. In 2010, a new version of the diagnostic criteria based on the WPI and SS scales was introduced by the ACR (Galvez-Sánchez & Reyes del Paso, 2020).

The ACR criteria introduced the SS scale, the development of scales based on the 2010 criteria, which help with diagnosis and evaluation of the severity of the disease, and measures the extent of fatigue, unrefreshed sleep, cognitive problems, and diversity of symptoms. (Galvez-Sánchez & Reyes del Paso, 2020). The SS score correlates with the widespread pain index (WPI) at 0.733, and the tender point counts at 0.680 and is used as part of FM criteria. (Galvez-Sánchez & Reyes del Paso, 2020). These scales fully capture the actual content of fibromyalgia for the provider. (Galvez-Sánchez & Reyes del Paso, 2020). The modifications have improved the sensitivity and specificity for the criteria to 90.2% and 89.5%, respectively. The scale captures the differences in the severity of symptoms in all patients (Galvez-Sánchez & Reyes del Paso, 2020).

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89.5%, respectively. The scale captures the differences in the severity of symptoms in all patients (Galvez-Sánchez & Reyes del Paso, 2020).

The ACR criteria introduced the SS scale, the scale which is based on the 2010 criteria, which helps to diagnose and evaluate the severity of disease, and the extent of fatigue, unrefreshed sleep, cognitive problems, and diversity of symptoms are measured (Galvez-Sánchez & Reyes del Paso, 2020). The SS score correlates with the widespread pain index (WPI) at 0.733, and the tender point counts at 0.680 and is used as part of FM criteria (Galvez-Sánchez & Reyes del Paso, 2020). These scales fully capture the actual content of Fibromyalgia for the provider. (Galvez-Sánchez & Reyes del Paso, 2020).

Modifications to the criteria' forms, sensitivity, and specificity, have improved to 90.2% and 89.5%, respectively (Galvez-Sánchez & Reyes del Paso, 2020). These scales capture the differences in the severity of symptoms in all patients (Galvez-Sánchez & Reyes del Paso, 2020). According to Wolfe (2010), using the 2010 ACR classification criteria was performed well in primary care, specialty clinics and provided patients homogeneity for clinical trials. However, providers in primary care are slow to embrace the criteria. This lack of criteria use may be due to the lack of education on the ACR's diagnostic criteria changes.

The project's goal was that the providers would evaluate and diagnose FM early in primary care clinics. The new practice strategy will improve the delay in initial diagnosing, starting treatment, and earlier referrals if needed. The benefit of using the diagnostic tool from the ACR is to decrease the time necessary to diagnose FM, improve provider knowledge of diagnosing FM, and encourage the starting of treatment early by

providers in primary care (Wolfe 2010). Early diagnosis will lessen the economic burden and the stress of the FM population.

In, Mexico, 6 European countries, and South Korea, a questionnaire survey of 1622 physicians were conducted by Perrot et al. (2012) that included primary care physicians, rheumatologists, neurologists, psychiatrists, and pain specialists. Results were that greater than 80% of the providers had seen a patient with FM in the past year. Perrot et al.'s (2012) result revealed that only 32% did not know about FM. More than 53% reported difficulty when it comes to diagnosing FM. Only 32% lacked knowledge of the American College of Rheumatology classification criteria. FM is challenging to diagnose and manage (Perrot et al., 2012). Many providers are not confident in developing a treatment plan and managing FM patients long-term (Perrot et al., 2012).

Rationale, Theoretical Framework, Models, Concepts/Theories

The Common-Sense Model of Self-Regulation (CSM) is a widely used conceptual framework that explains the processes by which patients with chronic diseases become aware of a health threat. The CSM helps an individual navigate effective responses to the threat, then formulate perceptions of the danger and potential treatment actions. Thereby, they can create action plans for addressing the risk and integrate continuous feedback to evaluate the action plan and threat progression (Leventhal et al., 2016).

The CSM model captures the layperson's understanding of their bodily changes or symptoms and focuses on five domains of symptoms: 1) identification of symptoms as an illness, 2) causes of the symptoms, 3) the timeline of how long the disease will last or the seriousness of the condition, 4) consequences of the disease and its symptoms, and 5) curability/controllability or what they will be able to do about the illness or symptoms

(Leventhal et al., 2016). The CSM may be used in chronic medical conditions when there was no apparent pathophysiological explanation, high uncertainty, lack of a productive cure, and has a high incidence of emotional problems. Providers' decisions about diagnosis, referrals, tests and prescribing are influenced by the providers' perceptions and vary between providers. Thus, while there is ambiguity over the diagnostic criteria for FMS, variations in clinicians' beliefs will determine the care patients receive (Pastor et al., 2012).

Regardless of practice size, age of practice, or specialty of practice, change plays an influential role in any healthcare practice. Kurt Lewin developed his change method theory in the 1940s, and his ideas of evolution and motivation in the workplace are very relevant in this century. Lewin's theory will work well in most practices because change is an ongoing process and involves action planning, fact-gathering, and communicating throughout each of his three stages of change, known as unfreeze, movement, and refreeze (Hussain et al., 2018).

The process ensures more precise expectations and shared understandings for those involved and affected by the desired change (Hussain et al., 2018). In Lewin's theory, unfreezing disrupts the current processes that are in place and introduce the expected or desired change (Hussain et al., 2018). The second stage, called a movement, or change, requires people to adopt the new process or change by promoting active involvement and open communication. The third stage, refreeze, reinforces the unique patterns of behaviors to sustain the transition by providing ongoing support, follow-up, and assistance to individuals using a new process (Hussain et al., 2018).

Lewin's Change Theory Applied

This DNP project's unfreezing stage involved educating working providers in a primary care setting to learn the importance of using the ACR preliminary diagnostic screening tool for those who present with chronic pain. The providers were given a pre-educational screening questionnaire. The stakeholders are the providers in the primary care clinic who also own the clinic, so their involvement was crucial to the process of unfreezing (Porter-O'Grady & Mallach, 2015).

The change phase of this DNP project was the providers' education on using the diagnostic criteria screening tool. A virtual education was provided by a voice-over PowerPoint explaining the tool's use and how the tool is scored. The providers were given a chance to ask questions and review their answers to the questionnaire (Porter-O'Grady & Mallach, 2015).

Finally, in the unfreezing phase, the provider was willing to incorporate the use of the ACR diagnostic criteria screening tool for all who present with chronic pain complaints. A post-educational questionnaire was given to the providers and reviewed (Porter-O'Grady & Mallach, 2015).

Specific Aims

According to Wolfe (2010), using the 2010 ACR classification criteria was found to have performed well in primary care, specialty clinics and provided patients homogeneity for clinical trials. However, providers in primary care are slow to embrace the criteria. This lack of criteria use may be due to the lack of education on the ACR's diagnostic criteria changes.

The project's goal was that the providers would evaluate and diagnose FM early in primary care clinics. The new practice strategy will improve the delay in initial diagnosing, starting treatment, and earlier referrals if needed. The benefit of using the diagnostic tool from the ACR is to decrease the time necessary to diagnose FM, improve provider knowledge of diagnosing FM, and encourage the starting of treatment early by providers in primary care (Wolfe 2010). Early diagnosis will lessen the economic burden and the stress of the FM population.

Early diagnosis can improve anxiety, reduce depression, and prevent ER visits due to pain and other symptoms that may occur when diagnosing is delayed. This DNP project's measurable objective is the early diagnosis and treatment of patients with FM by providers in primary care will be improved to at least 90% (Wolfe, 2010). FM should be considered in patients who present in primary care with mood changes, chronic pain, unrefreshed sleep, and fatigue, even though the symptoms can represent a diagnostic challenge. Many of these patients may meet the fibromyalgia criteria (Fitzcharles et al., 2018). However, due to the lack of education of the provider of the diagnostic criteria that can be used by the provider, it can be potentially frustrating in diagnosing and management in primary care. Recent studies have improved our understanding of the diagnostic criteria by using the ACR diagnostic criteria tool. Education of providers will lead to early diagnosis, improve the provider's confidence, and lead to significant and appropriate management of FM in primary care (Fitzcharles et al., 2018).

Doctor of Nursing Practice Essentials

The Doctor of Nursing Practice (DNP) Essentials outlines foundational competencies fundamental to advanced nursing practice roles. DNP Essentials include

scientific underpinnings for practice organizational and system's leadership for quality improvement and systems thinking; clinical scholarship and analytical methods for evidence-based practice; information systems technology and patient care technology for improvement and development of transformation of health care; health care policy for advocacy in healthcare; interprofessional collaboration for improving patient and population outcomes; clinical prevention and population health for improving the nation's health and advance the nursing practice (AACN, 2006). All eight elements are essential, but Essentials I, II, III, and VIII were mainly addressed by this DNP project.

DNP Essential I: Scientific Underpinnings for Practice: Essential I is met using the diagnostic criteria for fibromyalgia from the ACR. The common-sense model guides the project as an educational tool. Lewin's theory will work well in most practices because change is an ongoing process and involves action planning, fact-gathering, and communicating throughout each of his three stages of change, known as unfreeze, movement, and refreeze

DNP Essential II: Organizational and Systems Leadership for Quality Improvement and Systems: The essential was met after assessing the site's needs. It led to providing evidence-based training to the providers to improve patients' quality care by educating them on diagnostic criteria to diagnose fibromyalgia recommended by the ACR. Therefore, the enhancement of providers' education on the need for diagnostic criteria will lead to an early diagnosis and treatment of fibromyalgia.

DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-based Practice: Essential III was met by promoting the ACR recommendation as an educational tool as an intervention for the providers to use to improve patient outcomes.

It was also reached by analyzing various literature to decide the right approach for this project. The providers were given a copy of the diagnostic criteria after a pre-educational survey/questionnaire of the provider's confidence in diagnosing FM.

DNP Essential VIII: Advanced Nursing Practice: Essential VIII was met by moving forward with this project to educate the providers on the diagnostic criteria according to the ACR to diagnose fibromyalgia. Educating providers on the diagnostic criteria tool will improve the screening and diagnosing of fibromyalgia by an evidence-based tool.

Summary

The ACR has questionnaires designed to assess and validate pain, and it can also evaluate health-related quality of life such as physical, cognitive, and emotional in FM patients (Arnold et al., 2012). Using these questionnaires as part of each visit assessment can give a baseline health status and updated health status and aid in setting goals that the patient and the provider may monitor progress. The patient fills in these questionnaires when visiting a doctor (Arnold et al., 2012).

These Questionnaires designed to assist with diagnosing fibromyalgia include the Fibromyalgia Impact Questionnaire (FIQ) and the revised version (FIQR) (Arnold et al., 2012). The RFIQ assesses (functional abilities, symptoms, and the symptoms' impact on the patient) using 21 check-box questions completed in less than 2 minutes (Arnold et al., 2012).

The new ACR version of the preliminary diagnostic criteria screening tool in 2010 was based entirely on two scales: the Symptom Severity (SS) Scale and the Widespread Pain Index (WPI) Galvez-Sanchez & Reyes del Paso, 2020). These two

scales were added to the preliminary diagnostic criteria screening tool by the ACR and may be used at each visit as part of the patient's assessment. Using these two scales will let the patient and the provider know their current health status (Galvez-Sanchez & Reyes del Paso, 2020). Educating providers in a primary care setting on the availability of these screening tools and using the tools is the project's goal.

CHAPTER II - METHODOLOGY

In introducing this intervention to the primary care clinic, the researcher-must communicate educational intentions while informing the providers of the need to use the diagnostic tool for diagnosing FM. Patients presenting to primary care clinics with complaints of widespread generalized chronic pain patients should be screened for FM. If screening of these patients occurs this will help eliminate or decrease the length of time the patient spends without a diagnosis. The FM patient experiences many symptoms so much so it is hard to articulate all the symptoms to the provider. The ACR diagnostic screening tool addresses widespread pain, the severity of symptoms, and the assessment of the many somatic symptoms. Using this tool will aid the FM patient to have the ability to see symptoms in print and answer accordingly.

Population and Sample

The population of focus for this project was all patients 18 years and above that presented to the primary care clinic with complaints of widespread chronic pain (pain more than three months). This project was completed in a rural health clinic in central Mississippi. The ACR preliminary diagnostic criteria screening tool for FM will be used as a part of the routine assessment of chronic widespread pain patients. There are two providers in the clinic and they see between 40 and 50 patients a day.

Intervention

The availability and the use of the ACR diagnostic screening tool were the focus of the synthesis of evidence. The interventions focused on improving recognition, diagnosing of FM by the introduction of the ACR screening tool. This intervention will

decrease the lack of knowledge of the ACR screening tool and provide education on the tool.

Part 1. Retrospective chart review to determine the number of adults 18 years and older experiencing widespread chronic pain for longer than three months. This chart review was from January 1, 2020, to January 1, 2021, with a complaint of chronic pain ICD 10 code G89.4 was conducted by the DNP student. The DNP student reviewed the charts to see if the patients were diagnosed with FM and if a screening tool was used.

Part 2. The participants of the intervention were the primary caregivers working at a rural health clinic in central Mississippi.

1. A pre-intervention questionnaire was sent to the providers via Qualtrics to be completed. The consent form was included and had to be agreed to before the pre-questionnaire could be completed.
2. A voice-over educational PowerPoint covering the history, diagnosing, and a copy of the ACR preliminary diagnostic criteria for FM was sent to the providers for review after the pre-intervention questionnaire was sent.
3. A post-intervention questionnaire was sent to providers via Qualtrics for completion.
4. The providers were able to ask questions regarding intervention via Zoom.

Measures

A questionnaire, both pre- and post-education, was utilized to evaluate the level of understanding of the diagnostic criteria for FM after the educational intervention was completed. The providers were allowed to ask questions regarding the educational

intervention via Zoom before the completion of the post-questionnaire. A copy of the pre- and post-education questionnaires is located in Appendix B.

Analysis

The DNP student was the only individual collecting data from the charts via computer documentation software. The important data elements were identified, recorded, and then organized into the form created by this DNP student. The information gathered from the pre-education and post-education questionnaires were used to determine the effectiveness of the educational intervention. Quantitative statistics were utilized.

The question for evaluation for this DNP project was among patients 18 years and above who present to primary care clinic with complaints of widespread chronic pain lasting longer than three months, does educate providers on the availability and use of the ACR diagnostic screening criteria tool, compared to not educating the providers in primary care on the use and availability of the ACR diagnostic criteria tool, improve the provider's ability to diagnose fibromyalgia in primary care?

Qualitative research methods look deeper into the problem to uncover trends in thoughts. The interview method with providers was used before the project started, a pre-test was sent to the providers to be completed in Qualtrics, and the education of the providers took place by a voice-over PowerPoint presentation. After the voice-over PowerPoint presentation, each provider was sent a post-test in Qualtrics to complete.

Ethical Considerations

The DNP project involved de-identified patient charts for review by this DNP student. An Institutional Review Board (IRB) application was submitted and approved

by The University of Southern Mississippi (Protocol # IRB-19-591). The following COVID-19 precautions were taken during the implementation of this DNP project: This DNP student was the only researcher in a private area with access to the computer, 6 feet social distancing, facial coverings, disinfecting surfaces before and after use, hand washing, or hand sanitizer use. No additional contact was made. The project aims to facilitate the early detection, diagnosis, and treatment of FM in those evaluated in primary care using the ACR diagnostic screening tool. This new practice strategy will improve the delay in initial diagnosing, starting treatment, and earlier referrals if needed. The benefit of using the diagnostic tool from the ACR is to decrease the time needed to diagnose FM, improve provider knowledge of diagnosing FM, and encourage the starting of treatment early by providers in primary care. Early diagnosis will lessen the economic burden and the stress of the FM population.

Data consists of all de-identified data that will be maintained on the researcher's password-protected personal computer. The de-identified electronic data will be deleted six months after all graduation requirements have been met (June 2022). Physical data will be kept in a locked file cabinet at this researcher's home office and will be shredded six months after graduation requirements have been met on June 30, 2022.

Fibromyalgia symptoms often mimic many other conditions. Determine the cause of symptoms is the key to receiving a proper diagnosis for FM or other diagnoses. Some providers are unaware of the change to eliminate the digital palpation of tender points as part of FM's diagnostic criteria (Galvez-Sanchez & Reyes del Paso, 2020). FM is a severe burden to persons, society and is a health problem that can lead to overdiagnosis, overtreatment, or inadequate treatment of FM patients. Acceptance of FM by health

professionals and the general public must be achieved, which will assist with proper treatments, and decrease the burden on persons and society (Galvez-Sanchez & Reyes del Paso, 2020). The project's focus outcome seeks to help with the knowledge of the change by educating providers on using the latest ACR diagnostic criteria. Each provider can inform their colleagues and their community of the new diagnostic criteria. Providers in primary care can make an early diagnosis of Fibromyalgia, start treatment or rule out Fibromyalgia, and search for other possible diagnoses.

A retrospective chart review could be done by another researcher three months after this project to evaluate the use of the ACR diagnostic screening form and if fibromyalgia is being diagnosed, in addition, are the patients being treated in the clinic or referred?

Project Timeline

1. The researcher did a retrospective chart review of 18-year-olds previously seen in the clinic complaining of chronic pain with ICD 10 code G89.4. The data were collected from February 1, 2020, to February 1, 2021. The providers were sent a link to complete a pre-questionnaire in Qualtrics where the consent was completed before the questionnaire could be started.

2. The project was conducted over four weeks at a primary care clinic. All patients presenting to the clinic with a complaint of chronic pain longer than three months were assessed for fibromyalgia using the ACR diagnostic criteria. The scores of each patient were calculated, and the provider reviewed the assessment with the patients.

3. The following week the voice-over PowerPoint was delivered to the clinic on a jump drive for the providers to watch and send back to the researcher with questions

added which were addressed in the executive summary that will be sent to the providers after the project has been completed.

4. One week after the educational intervention was received back by the researcher from the providers, they were sent a link to complete the post-questionnaire questions in Qualtrics.

Summary

This DNP project was focused on educating providers in primary care clinics on the availability of the ACR Preliminary Diagnostic Criteria for FM. Learning of the ACR Diagnostic criteria will aid providers to assess, diagnose, and treat and/or refer as needed. The ACR can become a part of the patient's permanent chart and can be used as a baseline for future visits. The form can measure improvements, remain the same, or be improved upon. The next chapter discusses the results of this DNP project.

CHAPTER III – RESULTS

The benefits of the providers participating in this DNP project: Fibromyalgia affects as many as 4 million U.S. adults, which is 2% of the adult population. The cause of fibromyalgia is not known, but it can be effectively treated and managed. This DNP project aimed to educate providers in primary care on the availability and use of the American College of Rheumatology (ACR) diagnostic criteria screening tool for fibromyalgia. Early diagnosis can improve anxiety, reduce depression, and prevent ER visits due to pain and other symptoms that may occur when diagnosing is delayed. The benefit of using the diagnostic tool from the ACR is to decrease the time needed to diagnose FM, improve provider knowledge of diagnosing FM, and encourage the starting of treatment early by providers in primary care. Early diagnosis will lessen the economic burden and the stress of the FM population. The educational voice-over teaching regarding the use of the ACR preliminary diagnostic criteria for FM and a copy of the form which was given to the providers. This information is evidence-based and provides the providers with information and material to make decisions about patient care and diagnosing FM. The goal of this DNP project focused on assuring evidence-based education in the primary care clinic will be used to diagnose FM. The acknowledgment of ethical considerations was maintained throughout the project. Results from the retrospective chart review, Pre-Education and Post education Questionnaires, and Executive Summary to Facility Administration are discussed in this chapter.

Results from Retrospective Chart Review

With the retrospective chart review, there were a total of 100 charts reviewed of patients 18 years and above that were diagnoses with chronic pain between February 1,

2020, and February 1, 2021. Out of the 100 charts reviewed with chronic pain, 30 were diagnosed with fibromyalgia. With the 30 patients diagnosed with fibromyalgia 10 came to the clinic already diagnosed with fibromyalgia and 20 were diagnosed by the providers in the clinic. For those 20 patients that were diagnosed in the clinic by the providers the 10- point assessment was used to diagnose fibromyalgia.

Results from the Pre-Education Questionnaire

The intervention portion of this DNP project consists of a pre-intervention questionnaire being completed by all providers in Qualtrics after electronically signing the consent form to participate.

Table 1

Pre-Educational Findings

Questions	Responses of Yes	Responses of No
Are you confident in diagnosing fibromyalgia?	6	3
Have you received adequate training in diagnosing fibromyalgia?	4	5
Do you screen patients for fibromyalgia?	7	2
Do you screen chronic pain patients for fibromyalgia?	5	4
Do you use a screening tool/s to diagnose fibromyalgia?	4	5
If you are diagnosed with fibromyalgia, do you treat the patient?	5	4
If you are diagnosed with fibromyalgia do you refer?	3	2

Table 2

Post-Educational Findings

Questions	Responses of Yes	Responses of No
Has your confidence in diagnosing fibromyalgia changed?	7	0
Will you use the ACR diagnosing criteria form on all chronic pain patients?	7	0
Will you use the ACR diagnostic criteria on the patient with acute pain that also complain of mood changes and/or fatigue?	7	0
If you diagnose a patient with FM will you treat or refer?	7	0
Will you use another method to diagnose FM?	0	7

Results from the Post-Education Questionnaire

Based on the findings of the post-education questionnaire, the providers are confident in diagnosing, treating, and referring patients as needed. Seven out of 7 providers confidence in diagnosing fibromyalgia after the educational intervention.

Summary

Education of providers in primary care regarding the availability of the ACR Preliminary Diagnostic Criteria form will increase the provider's confidence in diagnosing FM (Wolfe, 2010). After the educational intervention part of this project, the providers' confidence in their ability to diagnose FM increased from 66% to 100 %. The next chapter will continue the discussion.

CHAPTER IV – DISCUSSION

Based on the results of the pre-education questionnaire, the providers lack the confidence to diagnose FM. Before the educational intervention (66.67%) of the providers answered yes to the pre-questionnaire question -are you confident in diagnosing FM. After educational intervention (100%) of providers responded yes to post questionnaire question-has your confidence in diagnosing FM improved.

Strengths and Limitations of the Project

One strength of the project was the provider's willingness to participate in the project. If there is a limitation to the project, it would be the number of providers in the clinic.

Key Findings

In the pre-educational questionnaire, 67% of the providers responded yes when asked “are you confident in your ability to diagnose FM.” After the educational intervention, the post-questionnaire shows that 100% of all participating providers responded yes when asked if their confidence to diagnose FM improved. This DNP project does answer the PICO question with yes educating providers in primary care in the availability and usage of ACR preliminary diagnostic criteria does improve the confidence of the providers to diagnose FM.

Impact of the DNP Project

This DNP project shows that educational intervention of the ACR preliminary diagnostic criteria does improve providers' confidence in their ability to diagnose fibromyalgia. Each provider at the clinic was forthcoming with their lack of knowledge

of the ACR preliminary diagnostic criteria and their thankfulness for the introduction of this form.

Summary

The goal of the DNP project was to improve the confidence of providers in primary care clinics' ability to diagnose FM. The project did show that after an educational intervention confidence will improve. The use of the ACR form will continue to facilitate improved confidence by providers in primary care early diagnosing, treatment, and referrals of FM as needed. A retrospective chart review can be done by another DNP student 90 days after this DNP project to evaluate the use of the ACR diagnostic screening form usage and if fibromyalgia is being diagnosed. Are the patients being treated in the clinic or referred?

Conclusion

In conclusion, the project evaluated the effectiveness of the educational intervention on the providers of this rural health regarding the use of the ACR preliminary criteria for diagnosing FM. The project showed that when an educational intervention that is focused on certain criteria is presented it does improve the provider's confidence. Another doctoral student can, at a later date, evaluate the overall effectiveness of the use of the ACR preliminary diagnostics criteria for FM by doing a chart review at a later date. The use of this form will facilitate early diagnosing, treatment and referrals as needed.

APPENDIX A – Clinical Diagnostic and Severity Criteria for Fibromyalgia: Widespread

Pain Index (WPI) and Symptom Severity (SS) Scale

Criteria

1. A patient satisfies diagnostic criteria for fibromyalgia if the following 3 conditions are met:
2. WPI ≥ 7 and SS scale score ≥ 5 or WPI 3-6 and SS scale score ≥ 9
3. Symptoms have been present at a similar level for at least 3 months.
4. The patient does not have a disorder that would otherwise explain the pain.

Ascertainment WPI (0-19)—

Directions: Note the number of areas in which the patient has had pain during the past week. In how many areas has the patient had pain?

Left and Right Upper back Shoulder girdle

Left and Right Hip (buttock, trochanter)

Left and Right jaw

Lower Back

Abdomen

Chest

Left and Right Lower leg

Left and Right upper leg

Left and Right upper arm

Left and Right lower arm

SS scale score (0-12) = Symptom Severity + Extent of Somatic Symptoms Symptom severity—

Directions: Using the provided scale, indicate the level of severity experienced for each of the 3 following symptoms:

Fatigue

Waking unrefreshed

Cognitive symptoms

Scale 0 = no problem 1 = mild: slight, mild, or intermittent problems 2 = moderate: considerable problems, often present and/or at a moderate level 3 = severe: pervasive, continuous, life-disturbing problems

The extent of somatic symptoms—

Directions: Indicate how many somatic symptoms the patient has used the following **scale** 0 = no symptoms 1 = few symptoms 2 = a moderate number of symptoms 3 = many symptoms

Somatic symptoms that might be considered include muscle pain, irritable bowel syndrome, fatigue/tiredness, thinking or remembering problems, muscle weakness, headache, pain/cramps in abdomen, numbness/tingling, dizziness, insomnia, depression, constipation, pain in the upper abdomen, nausea, nervousness, chest pain, blurred vision, fever, diarrhea, dry mouth, itching, wheezing, Raynaud phenomenon, hives/welts, ringing in ears, vomiting, heartburn, oral ulcers, loss/change in taste, seizures, dry eyes, shortness of breath, loss of appetite, rash, sun sensitivity, hearing difficulties, easy bruising, hair loss, frequent urination, painful urination, and bladder spasms.

APPENDIX B – Pre- and Post-Questionnaires

Pre-education questionnaire.

- a. Are you confident in diagnosing fibromyalgia? Yes or No
- b. Did you receive adequate training in diagnosing FM? Yes or No
- c. Do you screen patients for fibromyalgia? Yes or No
- d. Do you screen chronic pain patients for fibromyalgia? Yes or No
- e. What screening tool/s do you use to diagnose fibromyalgia? 18 point, WPI, SS,
or
other tools/s
- f. If you diagnose a patient with fibromyalgia? do you treat the patient or do you refer the patient?

A pre-recorded video will be sent to the providers via email for review.

Post-education questionnaire.

- a. Has your confidence in diagnosing FM changed? Yes or No
- b. Will you use the ACR diagnostic criteria on all chronic pain patients? Yes or No
- c. Will you use the ACR diagnostic criteria on the patient with acute pain?
Yes or No
- d. If you diagnose a patient with FM will you treat or refer?
- e. Will you use another method to diagnose FM? Yes or No

APPENDIX C – Doctor of Nursing Practice Essentials

Essential I: Scientific Underpinnings for Practice	This essential is met using the diagnostic criteria for fibromyalgia from the ACR. The common-sense model guides the project as an educational tool. Lewin's theory will work well in most practices because change is an ongoing process and involves action planning, fact-gathering, and communicating throughout each of his three stages of change, known as unfreeze, movement, and refreeze.
Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking	The essential was met after assessing the site's needs. It led to providing evidence-based training to the providers to improve patients' quality care by educating them on diagnostic criteria to diagnose fibromyalgia recommended by the ACR. Therefore, the enhancement of providers' education on the need for diagnostic criteria will lead to an early diagnosis and treatment of fibromyalgia.
Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based for Practice	This essential was met by promoting the ACR recommendation as a screening tool for the providers to use to improve patient outcomes in primary care clinics.
Essential IV: Information Systems/Technology and Patient Technology for the Improvement and Transformation of Health Care	This essential was met by suggesting that the ACR form become a part of the EHR as a screening tool and be used on all patients with the complaint of chronic pain
Essential V: Health Care Policy for Advocacy in Health Care	The project advocated for improving the screening process for all patients that present to primary care clinics with a complaint of chronic pain.
Essential VI: Interprofessional Collaboration for Improving Patient and Population	This project advocated for improving the screening process for chronic pain patients and asking the facility to consider adding to EHR as an ongoing screening tool.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health	The overall purpose of this project is the early identification of fibromyalgia. It is an attempt to aid primary care providers in this process preventing years of debilitating symptoms.
Essential VIII: Advanced Nursing Practice	This essential was met by moving forward with this project to educate the providers on the diagnostic criteria according to the ACR to diagnose fibromyalgia. Educating providers on the diagnostic criteria tool will improve the screening and diagnosing of fibromyalgia by an evidence-based tool.

APPENDIX D – Synthesis of Evidence

Reference	Design	Sample	Findings	Recommendations
<p>Ablin, J., Fitzcharles, M., Buskila, D., Shir, Y., Sommer, C., & Häuser, W. (2013). Treatment of Fibromyalgia Syndrome: Recommendations of recent evidence-based interdisciplinary guidelines with special emphasis on complementary and alternative therapies. <i>Evidence-Based Complementary and Alternative Medicine</i>, 2013, 1-7. https://doi.org/10.1155/2013/485272</p>	A systematic search	Guideline bibliographies search was manually conducted to verify that all published guidelines were identified.	<p>No therapy/treatment will cure FM. The consensus is that self-management strategies will help patients recognize and adapt to symptoms that will preserve and improve daily function and maintain their quality of life for FM patients.</p> <p>.</p>	A patient-tailored approach that follows symptoms is what all three guidelines emphasized.

<p>Arnold, L. M., Clauw, D. J., & McCarberg, B.H. (2011). Improving the recognition and diagnosis of Fibromyalgia. <i>Mayo Clinic Proceedings</i>, 86(5), 457-464. https://doi.org/10.1016/j.mcp.2010.0738</p>	NA	NA	<p>Fibromyalgia is a diagnosis similar to other chronic pain illnesses such as migraine headaches and is appropriate for primary care providers to diagnose in primary care clinics.</p>	<p>Patients with FM can achieve better health outcomes and quality of life. Patients with FM can accomplish both by their primary care providers providing effective treatment plans based on an increased understanding of the FM.</p>
<p>Arnold, L. M., Clauw, D. J., Dunegan, L. J., & Turk, D. C. (2012). A framework for fibromyalgia management for primary care providers. <i>Mayo Clinic Proceedings</i>, 87(5), 488-496. https://doi.org/10.1016/j.mayocp.2012.02.010</p>	NA	NA	<p>A framework for primary care providers to treat patients with FM effectively is a part of the multidisciplinary approach to improve symptom management, health status, patient education, and healthcare outcomes. This framework is similar to the integrated approach taken in the long-term care of other chronic health conditions, such as diabetes, asthma, and hypertension.</p>	<p>The approach for FM management follows core principles of comprehensive assessment, education, goal setting, and multimodal treatment. The treatment includes pharmacological, physical activity, education similar to managing other chronic medical disorders in primary care. Based on the above management principles, this review presents a framework for primary care</p>

				providers to develop a patient-centered treatment program for patients with FM.
Arnold, L.M., Crfford, L. J., Mease, P. J., Burgess, S. M., Palmer, S. C., Abetz, L., & Martin, S. A. (2008). Patient perspectives on the impact of Fibromyalgia. <i>Patient Education and Counseling</i> , 73(1), 114-120. https://doi.org/10.1016/j.pec.2008.06.005	Review the epidemiology, pathophysiology, and management of FM by searching PubMed references from articles and selected papers based on quality, relevant to the potential for future improvement, importance in illustrating current management pathways, and relevance to the illness.	In which six focus group sessions with 48 women diagnosed with fibromyalgia were conducted to elicit concepts and ideas to assess the impact of fibromyalgia on their lives.	A peer-reviewed journal supports the conclusions that FM is significant in illustrating current management pathways and the necessity for future improvements.	Implementing a patient-centered medical home for managing FM patients would allow these patients to be successfully managed in primary care clinics. Primary care clinics manage many other chronically diagnosed patients, and several barriers have to be overcome before this can be implemented.

<p>Arnold, L. M., Gebke, K. B., & Choy, E. H. (2016). Fibromyalgia: Management strategies for primary care Providers. <i>International Journal of Clinical Practice</i>, 70(2), 99-112. https://doi.org/10.1111/ijcp.12757</p>	<p>Review the epidemiology, pathophysiology, and management of FM by searching PubMed references from articles and selected papers based on quality, relevant to the potential for future improvement, importance in illustrating current management pathways, and relevance to the illness.</p>	<p>The implementation of a framework for chronic pain management in primary care would limit unnecessary, time-consuming, and costly tests, reduce diagnostic delay and improve patient outcome</p>	<p>A peer-reviewed journal supports the conclusions that FM is significant in presenting current management pathways and strategies necessary for future improvements.</p>	<p>Providing a patient-centered medical home for managing FM patients would allow these patients to be successfully managed in primary care clinics. Primary care clinics manage many other chronically diagnosed patients, and several barriers have to be overcome before this can be implemented.</p>
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<p>Fitzcharles, M., Perrot, S., & Häuser, W. (2018). Comorbidity fibromyalgia: A Qualitative review of prevalence and Importance. <i>European Journal of Pain</i>, 2(9), 1565-1576. https://doi.org/10.1002/ejp.1252</p>	<p>829 previously diagnosed FM patients and controls using rheumatologist physical and interview examinations, including a widespread pain index (WPI) and symptom severity (SS), measure the number of painful body regions and the severity of symptoms.</p>	<p>Physicians were recruited randomly from a list of 113 rheumatologists members of the ACR and indicated an interest in participating in the study after an e-mail solicitation.</p>	<p>A case definition and diagnostic criteria for FM have been developed. This simple case definition of FM is correctly diagnosed by using the WPI and SS scales. Classified 88.1% of cases classified by the ACR classification criteria and did not require the tender point examination or physical examination.</p>	<p>Recommend that a Follow-up study in the primary care setting be completed. The SS scale enables the assessment of FM symptom severity in persons with FM and those with whom the criteria have not been applied, and it will be instrumental in the longitudinal evaluation of patients with various marked symptoms.</p>
<p>Pastor, M. A., López-Roig, S., Johnston, M., Gracia, R., & Daza, P. (2012). Clinical self-efficacy and illness beliefs in ambiguous chronic pain conditions: General Practitioners' management of Fibromyalgia. <i>Anales de Psicología</i>, 28(2). https://doi.org/10.1016/j.apsi.2012.03.001</p>	<p>NA</p>	<p>208 General Practitioners recruited voluntarily while attending educational workshops on Fibromyalgia, completed an adapted version of the Brief Illness Perception Questionnaire and ad hoc scales of clinical self-efficacy, clinical behavior, and</p>	<p>Doctors see Fibromyalgia as a severe condition and they perceived low control and moderate clinical self-efficacy. The main causes of Fibromyalgia were seen to be psychological.</p>	<p>GPs self-efficacy and control perception of Fibromyalgia need to be enhanced. While FM continues to be an ambiguous condition, variations in clinicians' cognitions will be important for the care patients receive.</p>

0. 018/analesps.28. 2135291		satisfaction.		
Wolfe, F., Clauw, D. J., Fitzcharles, M., Goldenberg, D. L., Katz, R. S., Mease, P., Russell, A. S., Russell, I. J., Winfield, J. B., & Yunus, M. B. (2010). The American College of rheumatology Preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. <i>Arthritis Care & Research</i> , 62(5), 600-610. https://doi.org/10.1002/acr.20140	839 previously diagnosed FM patients and controls using rheumatologist physical and interview examinations, including a widespread pain index (WPI) and symptom severity (SS), measure the number of painful body regions and the severity of symptoms.	Physicians were recruited randomly from a list of 113 rheumatologists members of the ACR and indicated an interest in participating in the study after an e-mail solicitation.	A case definition and diagnostic criteria for FM have been developed. This simple case definition of FM is correctly diagnosed by using the WPI and SS scales. Classified 88.1% of cases classified by the ACR classification criteria and did not require the tender point examination or physical examination.	Recommend that a Follow-up study in the primary care setting be performed The SS scale enables the assessment of FM symptom severity in persons with FM and those with whom the criteria have not been applied. It will be instrumental in the longitudinal evaluation of patients with various marked symptoms.

<p>Wierwille, L. (2011).Fibromyalgia: Diagnosing and managing a Complex syndrome. <i>Journal of the American Academy of Nurse Practitioners</i>, 24(4), 184-192. https://doi.org/10.1111/j.1745-7599.011.00671.x</p>	<p>Cohort studies were performed using the Newcastle-Ottawa Scale (NOS)16 and the cross-sectional studies using Quadas</p>	<p>The search included Evidence-Based Medicine Reviews, Ovid MEDLINE, PubMed, and CINAHL. Search terms used: fibromyalgia diagnosis, fibromyalgia pathophysiology , incidence of fibromyalgia, fibromyalgia comorbidities, fibromyalgia, etiology fibromyalgia treatment, American College of Rheumatology criteria. Search limited to sources from 1990 to 2010.</p>	<p>The search included reviews of evidence-based medicine limited to sources from 1990 to 2010. Search terms used: FM diagnosis, FM pathophysiology , FM treatment.</p>	<p>Treatment is most beneficial when tailored to individual patient presentation, and further research is warranted, particularly in the domains of pathophysiology and efficacy of treatment options.</p>
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<p>Langhorst, J., Musial, F., Klose, P., & Hauser, W. (2009). Efficacy of hydrotherapy in fibromyalgia syndrome--a meta-analysis of randomized controlled clinical trials. <i>Rheumatology</i>, 48(9), 1155-1159. doi:10.1093/rheumatology/kep182</p> <p>To assess the efficacy of hydrotherapy in fibromyalgia syndrome (FMS).</p>	<p>Randomized controlled trials (RCTs) that compared hydrotherapy without exercise with any other intervention or no intervention in patients diagnosed with fibromyalgia syndrome based upon recognized criteria were eligible for inclusion.</p>	<p>Two reviewers independently extracted data to calculate standardized mean differences (SMDs), using means and standard deviation of change scores for each intervention, and 95% confidence intervals (CI).</p>	<p>This review concluded that there was moderate evidence that hydrotherapy had short-term beneficial effects on pain and health-related quality of life in fibromyalgia syndrome patients.</p>	<p>The authors stated that high-quality studies with larger sample sizes were required to confirm the conclusions of this review.</p>
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AMERICAN COLLEGE OF RHEUMATOLOGY (ACR) PRELIMINARY DIAGNOSTIC CRITERIA FOR FIBROMYALGIA¹

The information contained on this form was derived from Wolfe F, Clauw DJ, Fitzcharles M-A, et al. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. *Arthritis Care Res.* 2010;62(5):600-610.

PART 1: WIDESPREAD PAIN INDEX

HOW TO CALCULATE THE PATIENT'S WIDESPREAD PAIN INDEX (WPI)

1. Using the list of 19 body areas, identify the areas where the patient felt pain over the past week. As a visual aid, front/back body diagrams are included.

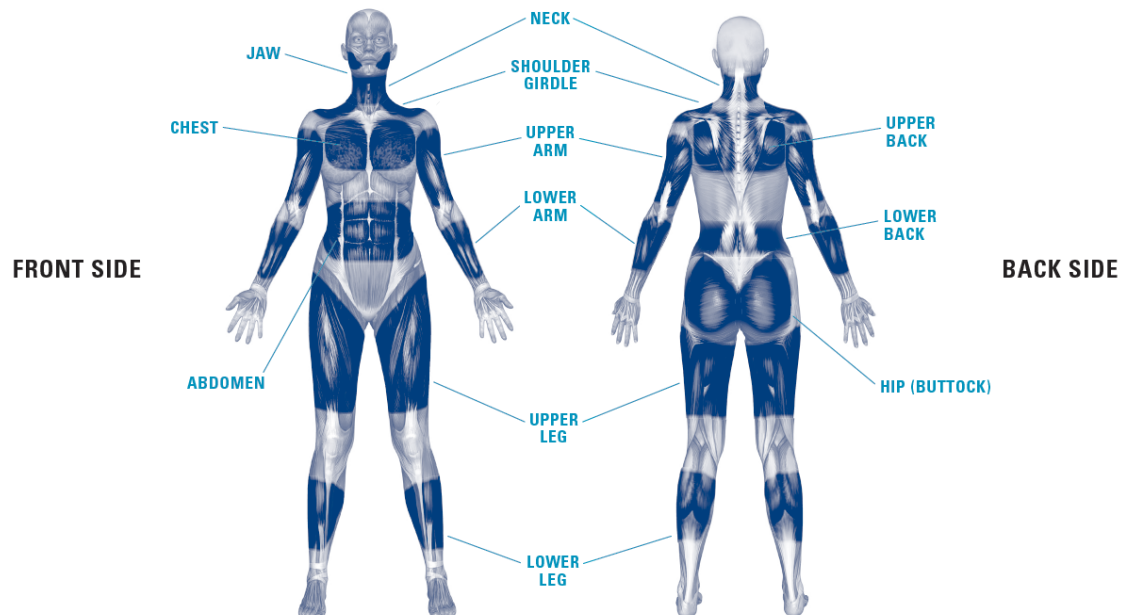
— Each area identified on the list counts as 1

2. Total the number of body areas (the WPI score can range from 0 to 19).

Write the patient's WPI score here: _____.

Identify the areas where the patient felt pain over the past week

- | | | | |
|---|---|---|-------------------------------------|
| <input type="checkbox"/> Shoulder girdle, left | <input type="checkbox"/> Lower arm, right | <input type="checkbox"/> Lower leg, left | <input type="checkbox"/> Abdomen |
| <input type="checkbox"/> Shoulder girdle, right | <input type="checkbox"/> Hip (buttock), left | <input type="checkbox"/> Lower leg, right | <input type="checkbox"/> Neck |
| <input type="checkbox"/> Upper arm, left | <input type="checkbox"/> Hip (buttock), right | <input type="checkbox"/> Jaw, left | <input type="checkbox"/> Upper back |
| <input type="checkbox"/> Upper arm, right | <input type="checkbox"/> Upper leg, left | <input type="checkbox"/> Jaw, right | <input type="checkbox"/> Lower back |
| <input type="checkbox"/> Lower arm, left | <input type="checkbox"/> Upper leg, right | <input type="checkbox"/> Chest | |



PART 2A: SYMPTOM SEVERITY SCALE (LEVELS OF SEVERITY)

HOW TO MEASURE THE PATIENT'S LEVEL OF SYMPTOM SEVERITY

1. Using a scale of 0 to 3, indicate the patient's level of symptom severity over the past week in each of the 3 symptom categories. Choose only 1 level of severity for each category.

— The score is the sum of the numbers that correspond to the severity levels identified in all 3 categories

2. Total the scale numbers for all the 3 categories and write the number here: _____.

Fatigue

- ☐ 0 = No problem
- ☐ 1 = Slight or mild problems; generally mild or intermittent
- ☐ 2 = Moderate; considerable problems; often present and/or at a moderate level
- ☐ 3 = Severe; pervasive, continuous, life-disturbing problems

Waking unrefreshed

- ☐ 0 = No problem
- ☐ 1 = Slight or mild problems; generally mild or intermittent
- ☐ 2 = Moderate; considerable problems; often present and/or at a moderate level
- ☐ 3 = Severe; pervasive, continuous, life-disturbing problems

Cognitive symptoms

- ☐ 0 = No problem
- ☐ 1 = Slight or mild problems; generally mild or intermittent
- ☐ 2 = Moderate; considerable problems; often present and/or at a moderate level
- ☐ 3 = Severe; pervasive, continuous, life-disturbing problems

PART 2B: SYMPTOM SEVERITY SCALE (OTHER SOMATIC SYMPTOMS)

HOW TO DETERMINE THE EXTENT OF THE PATIENT'S OTHER SOMATIC SYMPTOMS

Using the symptoms list on the following page, determine the extent of other somatic symptoms the patient may have experienced over the past week.

1. Determine the quantity of somatic symptoms using the list on the following page.
2. Using your best judgment, calculate the score that matches the quantity of those somatic symptoms and write the number here: _____.

Add the scores from Parts 2a and 2b (the Symptom Severity score, or SS score, can range from 0 to 12).

Write the patient's SS score here: _____.

OTHER SYMPTOMS

- | | | | |
|---|--|---|---|
| <input type="checkbox"/> Muscle pain | <input type="checkbox"/> Depression | <input type="checkbox"/> Itching | <input type="checkbox"/> Dry eyes |
| <input type="checkbox"/> Irritable bowel syndrome | <input type="checkbox"/> Constipation | <input type="checkbox"/> Wheezing | <input type="checkbox"/> Shortness of breath |
| <input type="checkbox"/> Fatigue/tiredness | <input type="checkbox"/> Pain in upper abdomen | <input type="checkbox"/> Raynaud's | <input type="checkbox"/> Loss of appetite |
| <input type="checkbox"/> Thinking or memory problem | <input type="checkbox"/> Nausea | <input type="checkbox"/> Hives/welts | <input type="checkbox"/> Rash |
| <input type="checkbox"/> Muscle weakness | <input type="checkbox"/> Nervousness | <input type="checkbox"/> Ringing in ears | <input type="checkbox"/> Sun sensitivity |
| <input type="checkbox"/> Headache | <input type="checkbox"/> Chest pain | <input type="checkbox"/> Vomiting | <input type="checkbox"/> Hearing difficulties |
| <input type="checkbox"/> Pain/cramps in abdomen | <input type="checkbox"/> Blurred vision | <input type="checkbox"/> Heartburn | <input type="checkbox"/> Easy bruising |
| <input type="checkbox"/> Numbness/tingling | <input type="checkbox"/> Fever | <input type="checkbox"/> Oral ulcers | <input type="checkbox"/> Hair loss |
| <input type="checkbox"/> Dizziness | <input type="checkbox"/> Diarrhea | <input type="checkbox"/> Loss/change in taste | <input type="checkbox"/> Frequent urination |
| <input type="checkbox"/> Insomnia | <input type="checkbox"/> Dry mouth | <input type="checkbox"/> Seizures | <input type="checkbox"/> Bladder spasms |

Based on the quantity of symptoms, the patient's score is:

- | | |
|---|--|
| <input type="checkbox"/> 0 = No symptoms | <input type="checkbox"/> 2 = A moderate number of symptoms |
| <input type="checkbox"/> 1 = Few symptoms | <input type="checkbox"/> 3 = A great deal of symptoms |

WHAT THE PATIENT'S SCORE MEANS

The patient's WPI score (Part 1): _____ The patient's SS score (Parts 2a and 2b): _____

A PATIENT MEETS THE DIAGNOSTIC CRITERIA FOR FIBROMYALGIA IF THE FOLLOWING 3 CONDITIONS ARE MET:

1a. The WPI score (Part 1) is greater than or equal to 7 and the SS score (Parts 2a and 2b) is greater than or equal to 5.

OR

1b. The WPI score (Part 1) is from 3 to 6 and the SS score (Parts 2a and 2b) is greater than or equal to 9.

2. Symptoms have been present at a similar level for at least 3 months.

3. The patient does not have a disorder that would otherwise explain the pain.

Reference: 1. Wolfe F, Clauw DJ, Fitzcharles M-A, et al. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. *Arthritis Care Res.* 2010;62(5):600-610.



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(Wolfe et al., 2010).

APPENDIX F – IRB Approval Letter

Office of
Research Integrity



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NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident template on Cayuse IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.
- Face-to-Face data collection may not commence without prior approval from the Vice President for Research's Office.

PROTOCOL NUMBER: IRB-20-533

PROJECT TITLE: Increasing Knowledge of Fibromyalgia Diagnostic Criteria Using a Screening Tool in Primary Care

SCHOOL/PROGRAM: College of Nursing & Health Pr, Leadership & Advanced Nursing

RESEARCHER(S): Diane Morris, Lisa Morgan

IRB COMMITTEE ACTION: Approved

CATEGORY: Expedited

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

PERIOD OF APPROVAL: March 29, 2021

Donald Sacco, Ph.D.

Institutional Review Board Chairperson

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