

Concept Paper

Empowering Patients, Enriching Outcomes: An Integrative and Occupational Approach to Addressing Chronic Pain in Primary Care

Kazandra Lopez Hernandez *, John V. Rider

School of Occupational Therapy, Touro University Nevada, 874 American Pacific Dr., Henderson, NV, USA; E-Mails: kazandra.lopez.hernandez@gmail.com; jrider@touro.edu

* **Correspondence:** Kazandra Lopez Hernandez; E-Mail: kazandra.lopez.hernandez@gmail.com

Academic Editor: Enrica Santarcangelo

Special Issue: [Occupational Therapy Interventions for the Treatment of Pain](#)

OBM Integrative and Complementary Medicine
2023, volume 8, issue 4
doi:10.21926/obm.icm.2304053

Received: July 26, 2023

Accepted: November 15, 2023

Published: November 20, 2023

Abstract

Chronic pain imposes significant personal and societal challenges. The concerning impact across all population levels has led to several federal agencies dedicating considerable efforts to developing clinically guiding recommendations to improve how chronic pain is addressed, specifically in primary care practice. These guidelines recognize and emphasize the importance of comprehensive evaluation, appropriate diagnosis, and treatment interventions that target multifactorial influences of pain for improved quality of life outcomes through function and participation in activities of daily living. Similarly, guideline recommendations encourage optimizing nonpharmacologic and non-opioid interventions and thorough risk assessment before initiating opioid treatment therapy. This paper proposes a clinical practice pathway demonstrating the integration of occupational therapy (OT) into primary care practice to address chronic pain through an interprofessional, collaborative, patient-centered approach that recognizes biopsychosocial components of chronic pain.

Keywords

Biopsychosocial; evaluation; occupational therapy; pain; primary care; treatment



© 2023 by the author. This is an open access article distributed under the conditions of the [Creative Commons by Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original work is correctly cited.

1. Introduction

Chronic pain is a critical public health concern, impacting more Americans than diabetes, heart disease, and cancer combined [1]. In 2021, an estimated 51.6 million persons experienced chronic pain; 17.1 million of those experienced high-impact chronic pain that resulted in significant functional limitations [2]. As the leading cause of disability, chronic pain has resulted in an estimated \$560-\$635 billion per year in medical costs and productivity loss [1]. As a critical public health concern, chronic pain has gained the attention of several health agencies, placing specific efforts towards improving how pain is addressed in the United States.

As our understanding of pain has progressed, the International Association for the Study of Pain has updated the definition of pain as “an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage” to better reflect the associated complexities of pain [3]. This definition aligns with the dynamic shift in pain management, viewing and addressing chronic pain as a disease with multiple mechanisms. Acute pain typically serves a survival function, responding to tissue damage and inflammation to bring attention to a potential threat, subsiding as tissue healing occurs [4]. Chronic pain is inconsistently defined but is often considered as pain that serves little biological function, persisting beyond the expected tissue healing time, leading to pathological dysfunction of the nervous system [5]. Chronic pain is associated with significant emotional distress and functional disability, interfering with daily activities and participation in social roles [6, 7]. Chronic pain is a complex phenomenon associated with neuroplastic changes in the central and peripheral nervous systems unique to an individual’s environmental contexts [8]. These neuroplastic changes result in alterations in the way an individual perceives sensation elicited by nociceptive or non-nociceptive factors [9]. Recognizing chronic pain as a disease is an advancement in health care that acknowledges the multifactorial influences on health and well-being at an individual and societal level. Several health agencies, including the Centers for Disease Control and Prevention (CDC) and the United States Department of Health and Human Services (HHS), have identified and published best-practice recommendations for chronic pain management [10, 11].

Pain has been identified as one of the primary reasons individuals seek medical consultation, with osteoarthritis, back pain, and headaches as the most prominent conditions [12]. Clinical pain management best-practice guidelines and recommendations target primary care practitioners, given primary care practice settings account for 45% of all opioid prescriptions [13]. Applying the *chronic pain as a disease* model may be most beneficial in primary-care practice as a first line of defense in effectively addressing chronic pain.

2. The Dynamic Bidirectional Impact of Chronic Pain and Biopsychosocial Factors

In the past, pain, including chronic pain, was approached primarily utilizing a biomedical perspective, recognizing a linear relationship between identified tissue trauma, and reported symptoms [14, 15]. Reported pain symptoms in cases where tissue damage was not present were labeled as *psychogenic pain*, thought to result primarily from psychological mechanisms [14]. Sole application of the biomedical model of pain, particularly for chronic pain, has demonstrated inadequacy and worsening effects [14, 15]. As new findings regarding chronic pain have emerged over the past few decades, the biopsychosocial model has become foundational in understanding chronic pain across healthcare practitioners and pain researchers. Biopsychosocial approaches in

chronic pain management have been found to be more effective than usual care, significantly decreasing pain and disability while improving function and quality of life [16-18]. The biopsychosocial model recognizes pain and disability as dynamic and multidimensional interactions across biological, psychological, and social factors that share a dynamic and bidirectional relationship (Figure 1) [14, 19, 20].

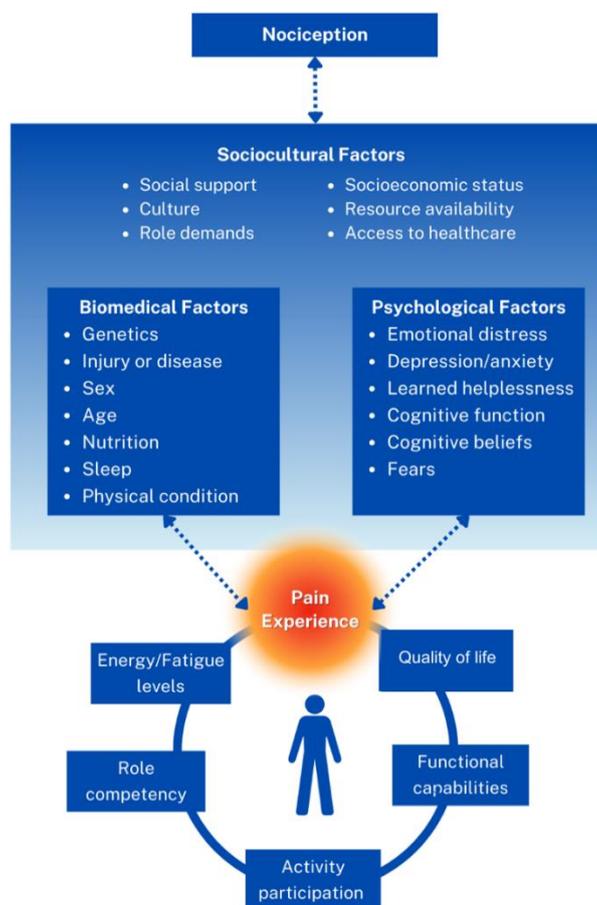


Figure 1 The biopsychosocial model of pain demonstrating interrelated influences of the individual’s pain experience.

Generally, psychological conditions such as depression, anxiety, and poor social contexts are recognized as consequences of unaddressed chronic pain [9]. However, these conditions may not only contribute to an individual’s predisposition to chronic pain but also worsen the pain experience [9, 21]. Biological factors, including age, sex, sleep, hormones, genetics, and endogenous opiate systems have demonstrated contributions to chronic pain [14, 22]. Similarly, psychological factors, including anxiety, depression, post-traumatic stress disorder, poor coping skills, and catastrophizing have been associated with chronic pain [23-25]. Social factors associated with chronic pain mirror factors described by the social determinants of health, including low educational attainment, limited social support, culture, race-based trauma, and adverse childhood experiences [9, 26]. While pain is a universal experience, it does not affect all equally. The HHS acknowledges disparities across marginalized populations in the prevalence, progression, treatment, and outcomes of pain-related conditions, affirming the significance of comprehensive initial chronic pain evaluation and consideration of sociocultural factors [11].

3. Chronic Pain Management Best Practice Recommendations

In response to the effects of the opioid epidemic, agencies, including the CDC and HHS, have published guidelines aimed at improving chronic pain management procedures and outcomes [10]. These guidelines highlight the importance of individualized treatment approaches that consider the personalized benefits and risks of all available treatment options [10, 11]. The CDC and HHS emphasize the efficacy of a biopsychosocial approach in chronic pain management, beginning with comprehensive evaluations that include a focused history, characteristics of potential pain contributing factors, physical examination, and related diagnostic imaging and tests [10, 11]. A comprehensive evaluation is a critical first step in the appropriate diagnosis and categorization of chronic pain, dictating and guiding prognosis, treatment approaches, and access to services from third-party payers [10, 11].

Limited evidence supports the long-term use of opioids to improve pain or function across chronic pain conditions [10, 27]. The long-term use of prescription opioids has been associated with an increased risk of overdose and dose dependence [27]. Given these findings, guideline recommendations urge clinicians to maximize nonpharmacologic and non-opioid therapies before considering opioid-based approaches [10, 11]. Many nonpharmacologic treatment methods, such as lifestyle redesign programs, learned pacing, and energy conservation techniques, amongst other integrative and complementary approaches, have demonstrated significant and consistent long-term improvements in pain and function with minimal risk for harm [28-32].

The CDC and HHS guidelines place an emphasis on employing interprofessional and multimodal approaches in chronic pain management in order to effectively address compounding contributing and consequential factors [10, 11]. While the popularity of interprofessional primary care teams is slowly growing, the majority of primary care practitioners and their patients collaborate with other contributing healthcare professionals through referrals, presenting a need for methods that support interprofessional collaboration amongst the primary care practitioner, patient, and other professionals.

To better support individuals experiencing chronic pain, the Centers for Medicare and Medicaid Services has engaged in quality improvement strategies to promote quality health outcomes, safety, equity, and accessibility to necessary care services [33]. These quality improvement strategies focus on applying patient-centered approaches to healthcare that incentivize quality of care rather than quantity [33]. Expanding financial incentives within the primary care structure presents an opportunity to increase access to high-quality, integrated, coordinated, and person-centered care while simultaneously supporting primary care practitioners [33]. Current literature reports that barriers to applying guideline recommendations in the clinical setting include time constraints, limited access to interprofessional collaboration, and public perceptions of alternative treatment regimens [34]. Presented barriers highlight the need for integrated clinicians to have skilled knowledge of chronic pain guideline principles, interprofessional and patient collaboration, and evidence-based nonpharmacological interventions that can feasibly be implemented in the primary care setting. By streamlining access to interprofessional services, patients are presented with opportunities to address and prevent functionally limiting consequences of pain earlier. Through empowering health-promoting self-management strategies, patient distress and disability may be mitigated while simultaneously reducing primary practitioner strain [35, 36].

4. The Role of Occupational Therapy in Primary Care

In the United States, individuals depend on primary care practitioners to address the majority of their healthcare needs. Ongoing primary care practitioner shortages and the increasing demand for their services have resulted in increased practitioner burnout and a need to restructure primary care to better support practitioners and patients [35, 37]. Primary care settings have been recognized as key for integrating preventative and behavioral health services, supporting a shift from reactive care to proactive care [37]. This refocus of primary care practice recognizes the influence of biopsychosocial factors, including social determinants of health, available supports and resources, culture, and co-presenting conditions on overall health, and encourages early detection of illness, disease, and the onset of chronic condition complications [37]. The concept of the interprofessional primary care team presents an opportunity to reduce primary care practitioner strain while meeting the holistic needs of individual patients and patient populations as a whole [37]. On the interprofessional team, each practitioner brings their unique skill set and practice at their full scope by addressing patient concerns that do not necessitate the primary care practitioner's specific skillset [35-37].

OT practitioners and their extensive training in addressing physical dysfunction and behavioral and mental health conditions to increase meaningful participation in daily activities seamlessly integrate into the primary care setting [37]. OT practitioners use a whole-person approach in their services, aligning with the preventative focus of primary care [36, 37]. OT practitioners empower patients to achieve independence and self-management of their own health and well-being by addressing occupational deficits within their individual contexts, roles, habits, and routines [37-40].

In the primary care setting, the OT practitioners may take on a triage role [37]. The OT practitioner addresses occupational deficits that could best be addressed in one or brief sessions, reducing the need for consecutive primary care sessions and visits to other clinics, and addressing the risk of the patient's inability to access outside referred services [37]. Due to the limitations of the primary care setting, an OT practitioner typically does not conduct extensive evaluations or treatment as doing so would impair their ability to address the needs of the primary care patient population [37]. If OT screening or evaluation determines an in-depth evaluation or ongoing intervention is warranted, the OT practitioner may opt to refer to outpatient OT or other professionals who may best support the patient's overall well-being [37].

5. The Role of Occupational Therapy in Chronic Pain Management

As key service providers for chronic pain, OT practitioners recognize the complex and dynamic relationship between an individual's contexts, including physiological and psychosocial functioning [38, 41]. The OT process has long embraced the biopsychosocial model to identify individual patient strengths and deficits, beginning with an evaluation that includes the development of the occupational profile, analysis of functional performance, and pain-specific assessments when addressing chronic pain [38-40, 42]. Findings from the evaluation directly inform the development of an individualized intervention plan that targets functional outcomes to support active engagement in life [38-40]. The OT process constantly adapts to the patient's fluid needs, emphasizing practitioner-patient collaboration [38]. The dynamic nature of the OT process allows for a therapeutic relationship that focuses on achieving collaboratively identified, functional, and

meaningful outcomes while reflecting and modifying the overall plan to best accommodate changes [38].

OT practitioners empower individuals experiencing chronic pain by identifying and implementing sustainable self-management strategies into their daily routines to reduce pain-related barriers to engaging in meaningful occupations, including, but not limited to, daily activities, work, leisure, sleep, social participation, education, and self-care, and performing meaningful roles [37-40]. The OT practitioner’s role focuses on improving function [14]. The OT practitioner addresses presented functional limitations to promote health, occupational engagement, active life participation, and overall improved quality of life by utilizing diverse and evidence-based intervention approaches [36, 38, 40, 43]. Occupational engagement is critical in chronic pain rehabilitation. OT practitioners assist individuals in building coping strategies to continue living according to their values, even when experiencing fluctuating pain [44].

In the primary care setting, OT evaluations complement primary care physical examinations and diagnostic procedures [36, 37]. As primary care team members, OT practitioners can support primary care providers by providing immediate evaluation and intervention to improve occupational participation and provide recommendations for referrals when warranted [36, 37]. The dynamic collaboration between the OT practitioner and primary care provider presents an opportunity to address chronic pain concerns beyond physical and sensory symptoms within the same setting, improving the continuum of care and patient access to necessary services [36]. In primary care, interventions may include the evidence-based integration of physiological or psychosocial self-management strategies, pain education, graded activity participation, manual techniques, compensatory strategies, activity modification, or specified health-promoting exercises and activities targeting functional participation and performance (Figure 2) [36-38, 40].

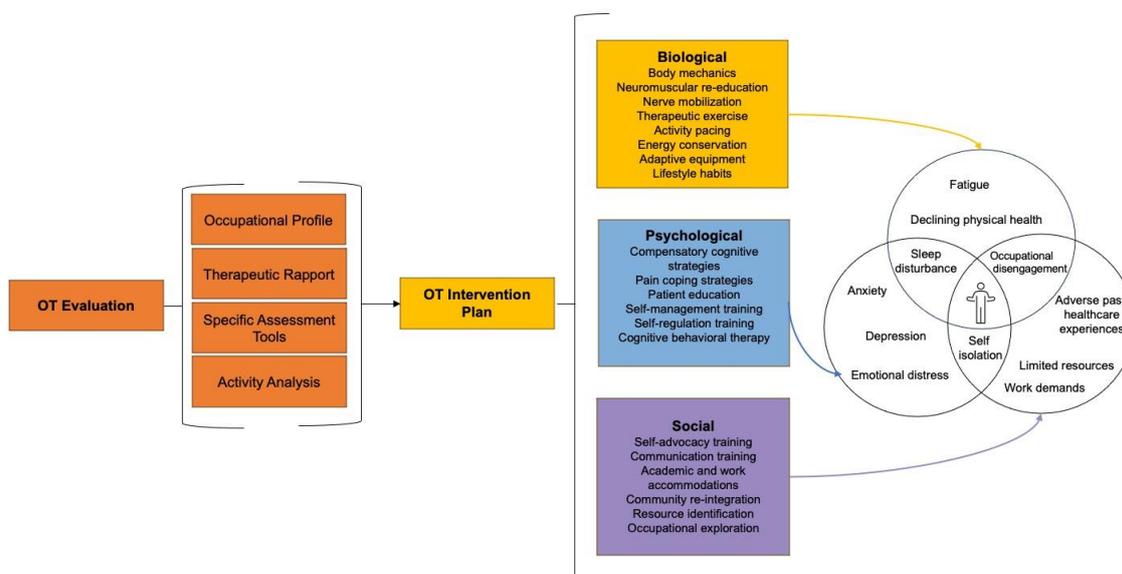


Figure 2 An example of the biopsychosocial pathways by which OT practitioners may act on chronic pain. This figure is meant to serve as a visual example and is not an exhaustive list of biopsychosocial considerations.

6. Proposed Chronic Pain Clinical Practice Pathway

This paper presents a proposed clinical pathway utilizing best practice recommendations that depict the integration of OT practitioners in primary care to support those experiencing chronic pain through service delivery and improved targeting of functional outcomes (Figure 3). By embedding clinical practice guideline recommendations, the clinical practice pathway reflects critical characteristics of effective chronic pain management as outlined by the CDC and HHS, including a biopsychosocial model-based approach, patient-centered care, shared decision-making, and integrated care [10, 11]. Developed with foundational OT principles, the proposed clinical practice pathway closely aligns with OT professional guidelines reflected by the *Occupational Therapy Practice Framework* [38] and the American Occupational Therapy Association’s *Role of OT in Chronic Pain* position statement [40]. The proposed clinical practice pathway is a resource intended for primary care OT practitioners and primary care providers encountering chronic pain in practice, designed to promote active collaboration between disciplines to best support patients experiencing chronic pain.

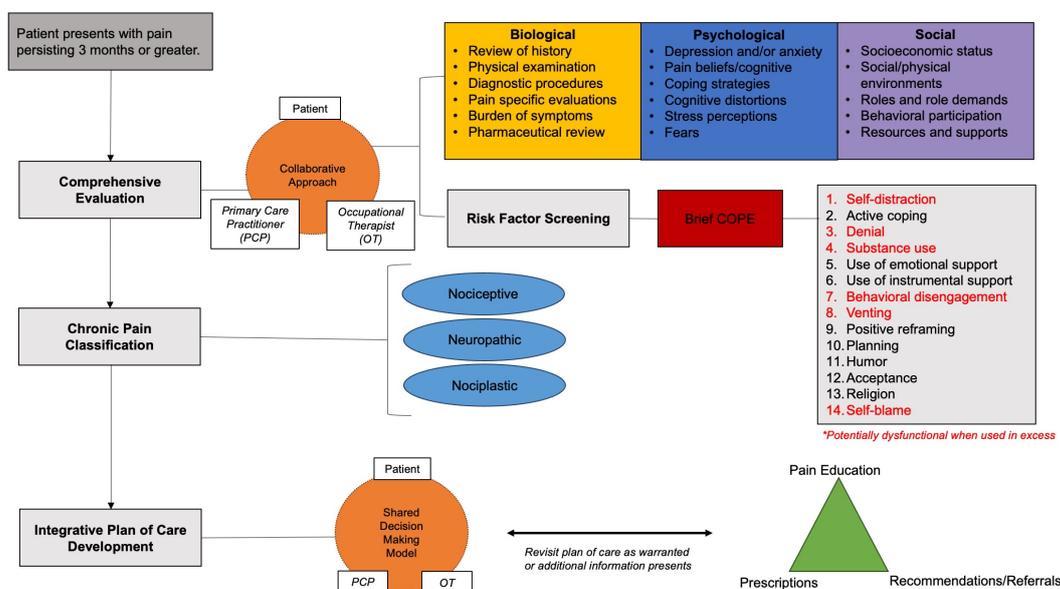


Figure 3 The proposed clinical practice pathway demonstrating the integration of OT practitioners in primary care and the application of recommended clinical guidelines.

When a patient presents to primary care with pain that has persisted for three months or more, a comprehensive evaluation is completed by the primary care provider and the OT practitioner. The comprehensive evaluation, including biopsychosocial components and their impact on occupational participation and performance, helps classify the chronic pain mechanism. Based on the comprehensive evaluation, a plan of care is developed using a shared decision-making model, emphasizing pain education, prescriptions, and recommendations or referrals for continued interprofessional care.

6.1 Comprehensive Evaluation

The chronic pain clinical practice pathway is initiated by a comprehensive patient evaluation, considering all influential pain factors, and categorized by biological, psychological, and social components, and their impact on occupational participation and performance. These categories support practitioner understanding of the patient’s pain experience and related compounding and consequential factors [10, 11, 36]. Components of the comprehensive evaluation are similar to general primary-care evaluations; pain-specific components make this evaluation unique to patients experiencing chronic pain [36]. The clinical practice pathway encourages primary care practitioner, OT practitioner, and patient collaboration throughout the process, as each team member offers specialized expertise.

6.1.1 Biological

The biological component expands on biomedical assessments, including a review of patient health and family history, physical examination, necessary diagnostic procedures, including objective lab values and imaging, and a review of pharmaceuticals. This component includes assessing the patient’s perceived burden and seeking to understand the functional implications of their pain experience. Common limitations associated with chronic pain include poor sleep, difficulties performing activities of daily living, home management, social participation, and engaging in health management occupations such as physical activity, presenting a potential concern for further compounding health implications [36, 45, 46]. Pain is a subjective experience and should be measured and monitored closely. However, pain-specific functional measures should be obtained to complement pain intensity ratings and patient reporting to demonstrate the clinical efficacy of applied interventions and treatments [11]. Functional pain-specific measures (Table 1) may serve as functional outcome measures used to evaluate intervention effectiveness and guide the plan of care. The use of functional measures provides a depiction of how the patient’s pain experience impacts their ability to participate in everyday life. By utilizing a functional measure of pain in addition to pain scores, patient care teams can monitor for functional changes, such as limitations in activities of daily living, that may require intervention to prevent disability. OT practitioners have advanced training in using functional-measure assessments and may support primary care workflow efficiency by completing these evaluation components.

Table 1 Functional pain-specific measures (non-exhaustive).

Functional Domain	Assessments
Physiological Functioning	Canadian Occupational Performance Measure (COPM)
	Central Sensitization Inventory
	Disabilities of Arm, Shoulder, and Hand
	Functional Disability Inventory
	Oswestry Pain Disability Index
	Pain Enjoyment of Life and General Activity (PEG) Scale
	Patient-Specific Functional Scale
Sensory Symptoms Checklist	

Psychological and Emotional Functioning	Brief-COPE
	Fear-Avoidance Beliefs Questionnaire
	Occupational Experience Profile
	Pain Catastrophizing Scale
	Pain Self-Efficacy Scale
	Self-Compassion Scale

6.1.2 Psychological

Psychological evaluation outlines components that complement regular depression and anxiety screening questionnaires. Psychological factors, including catastrophizing cognitions, task persistence, guarding, kinesiophobia, and resting coping responses, are most closely associated with pain and dysfunction [23]. Identifying deficits in pain beliefs, cognitive distortions, stress perceptions, coping skills, and pain-related fears serve as significant predictors of pain and dysfunction [23]. Assessment tools, including the Pain Catastrophizing Scale, Pain Coping Questionnaire, or Fear-Avoidance Belief questionnaire, may be warranted to support evaluation if risk assessment proceedings indicate potential concern [47-49].

6.1.3 Social

The evaluation of social components intends to understand the patient's perceived social support and influential social determinants of health, as these factors have been identified as strong predictors of pain and dysfunction [23]. When evaluating social factors, practitioners should aim to understand the patient's social, cultural, and environmental contexts, and associated performance factors, including their daily habits, roles, routines, and associated role demands. Utilizing patient interviews and reported roles and routines will provide insight into activities the patient finds meaningful and valuable. Patient-perceived satisfaction in their ability to complete routine and role demands should be noted to further aid the selection of evidence-based intervention approaches and outcome measurements. As this is an area of emphasis for OT practitioners, this information can be gathered while developing an occupational profile. Many patients experiencing chronic pain have experienced adversity within the healthcare system; therefore, practitioners should prioritize developing therapeutic rapport with the patient while empowering patient participation in the healthcare decision process.

6.1.4 Risk Assessment

The need to complete a thorough risk-benefit analysis is stressed across published pain management clinical guidelines. Adequate risk assessment, at minimum, should consider patient history, family history, biopsychosocial factors, screening tool results, and other measures [11]. However, the CDC reports no validated method or tool for evaluating patient risk or potential harmful outcomes from common pain management treatment approaches [10]. Practitioners should acknowledge due diligence in applying clinical reasoning in selecting risk assessment tools or procedures based on findings from the comprehensive evaluation and the practitioner-patient relationship. The proposed chronic pain clinical practice pathway includes the Brief COPE to provide further practitioner insight regarding the patient's coping skills as an identified predictor of pain and

dysfunction. The Brief COPE is a shortened form of the COPE Inventory instrument, a 28-item questionnaire with 14 subscales measured by two items each [50]. The Brief COPE instrument measures coping factors based on the Model of Cope, proposed by Lazarus and Folkman, including active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame [50, 51]. The author of the Brief COPE has proposed active coping, instrumental support, and planning as problem-focused coping strategies, and behavioral-disengagement, denial, self-distraction, self-blaming, substance use, and venting as dysfunctional strategies [51]. Regardless, the tool does not report a score but is intended to be individually weighed, allowing for patient-centered factors and practitioner clinical reasoning to be included when considering further evaluating the patient or engaging in tailored treatments that address dysfunctional coping [50]. Assessing coping factors is not a typical component of chronic pain evaluation in primary care; however, this addition can provide further insight into patient pain perceptions [14, 19]. The proposed clinical practice pathway includes the Brief COPE as a tool that may bring attention to specific coping strategies that may be detrimental to overall well-being and require further assessment or immediate intervention.

The Brief COPE has demonstrated positive validity and reliability psychometric properties utilizing the 14-factor structure in assessing coping mechanisms and has been widely utilized across diverse health conditions, including chronic pain [51]. The Brief COPE demonstrates clinical utility by informing the plan of care development process of additional concerns that must be addressed to support patient improvements in chronic pain while mitigating possible harm. Implementing the Brief COPE may best be completed upon patient intake, depending on individual clinic staffing and procedures. Further research on using the Brief COPE with the chronic pain population in primary care may support the expanded application of this tool in chronic pain management.

The comprehensive evaluation is critical in establishing a therapeutic patient-practitioner relationship and necessary to validate patient experiences and address chronic pain conditions and maladaptive beliefs and fears [11]. Findings from the evaluation inform chronic pain classification, an essential element of effective chronic pain management. Once prominent contributing and consequential factors and chronic pain type(s) have been identified, an individualized plan of care that considers patient-specific risks, strengths, deficits, and desired outcomes can be developed and initiated.

6.2 Chronic Pain Classification

The clinical application of the comprehensive evaluation serves as an adjunct to current diagnostic processes involved in the classification of chronic pain. The appropriate categorization of chronic pain subtype is a guiding principle of chronic pain management that influences prognosis, treatment options, and access to services implicated by third-party payer authorization [9]. Previously, the two recognized chronic pain phenotypes were nociceptive and neuropathic. In 2016, the term nociplastic was proposed as a descriptor for pain that could not be characterized by the activation of nociceptors or neuropathy, suggesting alterations in nociceptive function [52]. Nociplastic pain should be viewed as distinct but not exclusive. This newly categorized mechanism of pain can be identified in a wide range of pain conditions. Nociplastic pain validates symptom reports previously stigmatized as medically unexplained [53]. Increasing evidence suggests some

pain conditions may present with mixed pain phenotypes, resulting from a contribution of varied pain mechanisms [9]. Identifying the appropriate pain mechanism can guide OT practitioners and primary care providers in selecting evidence-based intervention approaches.

6.3 Integrative Plan of Care

Each of the previous components aid in structuring a patient-centered care plan focused on meaningful and functional outcomes. The primary care and OT practitioners should include the patient in discussing proposed intervention approaches using a shared decision-making model. The shared decision-making model has been associated with improved patient adherence, satisfaction, and clinical outcomes [54]. During the plan of care development phase of the proposed clinical practice pathway, the practitioner-patient partnership will be emphasized by acknowledging the patient's expertise in their own pain experience. Effective therapeutic practitioner-patient relationships will allow for an exchange of information, opinions, and concerns that will empower patient participation in the plan of care and trust in the practitioner. The initial primary care visit should aim to address the following patient-specific concerns, including *pain education, prescriptions, and recommendations/referrals*. The primary care provider has distinct expertise in diagnostics, pharmacological approaches to pain management, prescribing medication dosage, frequency, and necessary follow-up. Meanwhile, OT practitioners assess and address intangible aspects of pain that limit occupational participation [34]. When warranted, OT practitioners can support pharmacological interventions through medication management interventions to optimize health literacy, adherence, and expected benefits [36, 38, 40].

6.3.1 Patient Pain Education

Each practitioner involved in chronic pain management has a role in supporting patient pain education. Pain education has been associated with reductions in pain-related distress, improvements in self-management, and self-efficacy in individuals experiencing chronic pain [55-58]. Patient pain education should be patient-centered, aiming to address the mechanisms of pain affecting the patient, including prognosis, indications, contraindications, precautions, concerns, fears, and beliefs expressed by the patient, and seek to avoid nocebo effects or re-traumatization [26, 58].

6.3.2 Prescriptions

Pain management medications are categorized by non-opioid or opioid class. Depending on the patient's mechanism(s) of pain and other patient-specific factors, pharmacological intervention may be warranted [10]. Primary care providers should utilize current evidence and best judgment in addition to thorough risk-benefit analysis when considering the initiation of pharmacotherapy. Several pain management guidelines urge practitioners to maximize nonpharmacological, followed by non-opioid pharmacological intervention, before initiating opioids [10, 11]. The proposed clinical practice pathway is not intended for patients who have been on a plan of care that includes long-term use of opioids; abrupt discontinuation presents an increased risk of harm and requires specialty care [10].

6.3.3 Recommendations and Referrals

Practitioners must express the benefits and risks of each intervention to ensure patient understanding and realistic expectations of outcomes. Ideally, pain care plans apply an interprofessional approach that maximizes the skillset of varied professionals to effectively manage a patient's chronic pain and address consequential or contributing factors. Integrated care plans may further promote self-management and address behavior change principles necessary to support long-term chronic pain management outcomes [59]. If warranted, an OT practitioner may contribute recommendations for outside referral to outpatient OT or other professionals to the primary care practitioner and patient, screening, and evaluation findings. Integrated pain care has been recognized by the International Association for the Study of Pain as necessary to address pain comprehensively, yet it requires communication between involved practitioners and the patient and follow-up to be successful [59].

The integrated plan of care, goals, and targeted outcomes should be patient-centered, individualized, and agreed on by everyone involved, taking special consideration for the patient's preferences and available resources [59]. The plan of care may need to be adapted due to development or new findings; regardless, a similar shared decision-making model should be utilized when revisiting the plan of care development phase.

7. Clinical Vignette

Ronald, a 45-year-old male, presents to primary care. Ronald sustained a lumbar strain eight months ago when carrying heavy furniture during a home move. Ronald initially received care from an urgent care clinic, where he received prescriptions for narcotics, muscle relaxants, one week of bed rest, and was advised to apply heat after 72 hours. Ronald attempted to return to work two weeks after the injury. However, he was unsuccessful due to continued pain, limiting his ability to perform job demands. The inability to return to work has caused financial stress and tension within his marriage and exacerbated his worries, negatively impacting his sleep participation and ability to help around the house. Ronald says he "can never get comfortable" as prolonged sitting, standing, and excessive movement exacerbate his pain. Ronald describes his pain as a constant dull ache that turns into a sharp electrical shooting pain and a consistent 7 out of 10 on the pain intensity scale. Ronald expresses cold weather intensifies his pain to a 10.

Utilizing the proposed clinical practice pathway, the primary care provider has obtained x-ray and magnetic resonance imaging of his lumbar spine, demonstrating no acute physical trauma or damage to the site. Routine laboratory results indicate that Ronald has elevated low-density lipids and blood glucose. His primary care provider has encouraged him to exercise and adjust his diet; however, Ronald says he cannot exercise due to his pain. The primary care provider provided education on using non-opioid pain medications and topical analgesics appropriately and chronic pain mechanisms.

The primary care provider referred Ronald for a primary care OT evaluation through a direct introduction, often called a "warm handoff." The primary care provider highlighted concerns regarding the patient's maladaptive beliefs about pain and reduced sleep and activity participation. Utilizing the findings from the biological components of the comprehensive evaluation completed by the primary care practitioner, the OT practitioner completes the remaining components. The OT practitioner completed their evaluation, including an occupational profile, activity analysis, brief-

cope, brief pain inventory, and pain catastrophizing scale. The OT practitioner identified the following factors that may be contributing to Ronald's pain experience:

- Compounding stress
 - Stressful context of injury
 - Marital stress and limited support
 - Financial stress
 - Poor rest and sleep
- Maladaptive coping
 - Substance use (alcohol consumption)
 - Catastrophizing
 - Behavioral Disengagement
 - Work
 - Socializing with friends
 - Physical activity
 - Intimacy with partner
- Impaired active range of motion and decreased strength
- Poor body mechanics and posture
- Kinesiophobia (i.e., fear of movement)
- Poor endurance demonstrated by slight shortness of breath
- Dissatisfaction with current health status and health management skills
- Limited understanding of pain mechanisms

In collaboration with Ronald and the primary care provider, the OT practitioner has developed the following care plan for the initial visit and subsequent 1-2 visits.

- Provide patient education utilizing Pain Neuroscience Education strategies to support Ronald's understanding of the cause of his pain.
 - Review contraindications/indications of pain aiming to reduce fear of movement.
- Motivational Interviewing strategies to promote preferred activity re-engagement and health-promoting behaviors.
 - Physical activity and health-promoting dietary routine development within the context of Ronald's daily schedule.
- Postural training and graded therapeutic exercises/activities to improve joint mobility, muscular strength, and endurance.
- Cognitive behavioral techniques to address distorted thought patterns, stress, and sleep hygiene.
- Collaboratively develop a supported pain self-management plan with appropriate coping strategies and a relapse prevention plan for pain flare-ups.

8. Future Research

To best support individuals experiencing chronic pain, healthcare practitioners must view and treat the whole person, body, mind, and spirit. The proposed clinical practice pathway prioritizes best-practice recommendations and presents potential methods for the effective and efficient holistic evaluation and treatment of chronic pain. Future research efforts should incorporate evidence-based chronic pain care models, such as the proposed clinical practice pathway described,

to promote pain management quality improvement. Investigating the feasibility, applicability, and value-based outcomes of integrating OT in primary care can benefit patient outcomes and optimize the healthcare system by preventing primary care provider stress and burnout. Patient, practitioner, and public education should be a primary focus of macro-level pain management improvement efforts, improving education and training on acute and chronic pain at all clinical training levels and increasing legislator awareness [11]. These collective efforts have the potential to inform uniformly applied pain care models that include diagnostic, prevention of pain chronification and related dysfunction, and therapeutic approaches aimed at restoring meaningful and functional life participation [9, 11].

9. Conclusion

The proposed clinical practice pathway aims to address challenges in chronic pain care by pragmatically presenting a patient-centered and evidence-based process to support the uniform application of clinical guidelines in primary care. This pathway has embedded best-practice guidelines that demonstrate close alignment with OT standards of practice. Integrating OT practitioners in primary care settings may support addressing chronic pain early on, improving patient outcomes and optimizing healthcare costs, decreasing associated emotional stress and disability, and reducing primary care practitioner burnout. Similar models may be applied to other chronic conditions commonly seen in primary care practice; however, further research is warranted. Nonetheless, OT philosophies and foundational principles demonstrate a unique and critical role in supporting the integration of best-practice principles and value-based care into the primary care setting, especially when managing chronic conditions, such as chronic pain.

Author Contributions

Both authors have contributed to the concept, development, writing, and editing of this paper.

Funding

The authors have declared no sources of funding.

Competing Interests

The authors have declared that no competing interests exist.

Additional Materials

The following additional materials are uploaded at the end of this paper.

1. Carver (1997) Brief COPE

References

1. Institute of Medicine. Relieving pain in America: A blueprint for transforming prevention, care, education, and research. Washington, DC: National Academies Press; 2011. doi: 10.17226/13172.

2. Rikard SM, Strahan AE, Schmit KM, Guy Jr GP. Chronic pain among adults-United States, 2019-2021. *MMWR Morb Mortal Wkly Rep.* 2023; 72: 379-385.
3. Raja SN, Carr DB, Cohen M, Finnerup N, Flor H, Gibson S, et al. The revised International Association for the Study of Pain definition of pain: Concepts, challenges, and compromises. *Pain.* 2020; 161: 1976-1982.
4. Lundy-Ekman L. Central Somatosensory System. In: *Neuroscience fundamentals for rehabilitation.* 5th ed. Philadelphia: Elsevier; 2018. pp. 197-219.
5. Lundy-Ekman L. Pain as a disease: Neuropathic pain, central sensitivity syndromes, and pain syndromes. In: *Neuroscience fundamentals for rehabilitation.* 5th ed. Philadelphia: Elsevier; 2018. p. 220-240.
6. Nicholas M, Vlaeyen JWS, Rief W, Barke A, Aziz Q, Benoliel R, et al. The IASP classification of chronic pain for ICD-11: Chronic primary pain. *Pain.* 2019; 160: 28-37.
7. Treede RD, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, et al. Chronic pain as a symptom or a disease: The IASP Classification of chronic pain for the international classification of diseases (ICD-11). *Pain.* 2019; 160, 19-27.
8. Sibille KT, Steingrimsdóttir ÓA, Fillingim RB, Stubhaug A, Schirmer H, Chen H, et al. Investigating the burden of chronic pain: An inflammatory and metabolic composite. *Pain Res Manag.* 2016; 2016: 7657329.
9. Cohen SP, Vase L, Hooten WM. Chronic pain: An update on burden, best practices, and new advances. *Lancet.* 2021; 397: 2082-2097.
10. Dowell D, Ragan KR, Jones CM, Baldwin GT, Chou R. CDC clinical practice guideline for prescribing opioids for pain-United States, 2022. *MMWR Recomm Rep.* 2022; 71: 1-95.
11. U.S. Department of Health and Human Services. Pain management best practices inter-agency task force report: Updates, gaps, inconsistencies, and recommendations. Washington, DC: U.S. Department of Health and Human Services; 2019. Available from: <https://www.hhs.gov/sites/default/files/pmtf-final-report-2019-05-23.pdf>.
12. Sauver JL, Warner DO, Yawn BP, Jacobson DJ, McGree ME, Pankratz JJ, et al. Why patients visit their doctors: Assessing the most prevalent conditions in a defined American population. *Mayo Clin Proc.* 2013; 88: 56-67.
13. Levy B, Paulozzi L, Mack KA, Jones CM. Trends in opioid analgesic-prescribing rates by specialty, US, 2007-2012. *Am J Prev Med.* 2015; 49: 409-413.
14. Meints SM, Edwards RR. Evaluating psychosocial contributions to chronic pain outcomes. *Prog Neuropsychopharmacol Biol Psychiatry.* 2018; 87: 168-182.
15. Jensen MP, Turk DC. Contributions of psychology to the understanding and treatment of people with chronic pain: Why it matters to all psychologists. *Am Psychol.* 2014; 69: 105-118.
16. Gatchel RJ, Peng YB, Peters ML, Fuchs PN, Turk DC. The biopsychosocial approach to chronic pain: Scientific advances and future directions. *Psychol Bul.* 2007; 133: 581-624.
17. Guzmán J, Esmail R, Karjalainen K, Malmivaara A, Irvin E, Bombardier C. Multidisciplinary rehabilitation for chronic low back pain: Systematic review. *BMJ.* 2001; 322: 1511-1516.
18. Ho C, Argáez C. Occupational therapy for chronic pain management using the biopsychosocial approach: A review of the clinical and cost-effectiveness and guidelines. Canadian Agency for Drugs and Technologies in Health; 2017. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK519659/>.

19. Edwards RR, Dworkin RH, Sullivan MD, Turk DC, Wasan AD. The role of psychosocial processes in the development and maintenance of chronic pain. *J Pain*. 2016;17: T70-T92.
20. Gatchel RJ, Polatin PB, Mayer TG. The dominant role of psychosocial risk factors in the development of chronic low back pain disability. *Spine*. 1995; 20: 2702-2709.
21. Hegerl U, Mergl R, Henkel V, Pogarell O, Müller-Siecheneder F, Frodl T. et al. Differential effects of reboxetine and citalopram on hand-motor function in patients suffering from major depression. *Psychopharmacology*. 2005; 178: 58-66.
22. Samoborec S, Ruseckaite R, Ayton D, Evans S. Biopsychosocial factors associated with non-recovery after a minor transport-related injury: A systematic review. *PLoS One*. 2018; 13: e0198352.
23. Jensen MP, Moore MR, Bockow TB, Ehde DM, Engel JM. Psychosocial factors and adjustment to chronic pain in persons with physical disabilities: A systematic review. *Arch Phys Med Rehabil*. 2011; 92: 146-160.
24. Petrini L, Arendt-Nielsen L. Understanding pain catastrophizing: putting pieces together. *Front Psychol*. 2020; 11: 603420.
25. Quartana PJ, Campbell CM, Edwards RR. Pain catastrophizing: A critical review. *Expert Rev Neurother*. 2009; 9: 745-758.
26. Tidmarsh LV, Harrison R, Ravindran D, Matthews SL, Finlay KA. The influence of adverse childhood experiences in pain management: Mechanisms, processes, and trauma-informed care. *Frontier Pain Res*. 2022; 3: 923866-923866.
27. Chou R, Deyo R, Devine B, Hansen R, Sullivan S, Jarvik JG, et al. The effectiveness and risks of long-term opioid treatment of chronic pain. Rockville: AHRQ Publication; 2014. doi: 10.23970/AHRQPCERTA218. Available from: https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/chronic-pain-opioid-treatment_research.pdf.
28. Uyeshiro Simon A, Collins CER. Lifestyle Redesign® for Chronic Pain Management: a retrospective clinical efficacy study. *Am J Occup Ther*. 2017; 71: 7104190040p1-7104190040p7.
29. Guy L, McKinstry C, Bruce C. Learned pacing for adults with chronic pain: A randomised controlled trial feasibility study. *Aust Occup Ther J*. 2020; 67: 399-406.
30. Hesselstrand M, Samuelsson K, Liedberg G. Occupational therapy interventions in chronic pain: A systematic review. *Occup Ther Int*. 2015; 22: 183-194.
31. Lagueux É, Dépelteau A, Masse J. Occupational therapy's unique contribution to chronic pain management: A scoping review. *Pain Res Manag*. 2018; 2018: 5378541.
32. Rider JV, Tay MC. Increasing occupational engagement by addressing psychosocial and occupational factors of chronic pain: A case report. *Open J Occup Ther*. 2022; 10: 1-12.
33. Fowler L, Rawal P, Fogler S, Walderson B, O'Connell M, Quinton J. The CMS innovation center's strategy to support person-centered, value-based specialty care [Internet]. Maryland: Centers for Medicare & Medicaid Services; 2022. Available from: <https://www.cms.gov/blog/cms-innovation-centers-strategy-support-person-centered-value-based-specialty-care>.
34. Speerin R, Needs C, Chua J, Woodhouse LJ, Nordin M, McGlasson R, et al. Implementing models of care for musculoskeletal conditions in health systems to support value-based care. *Best Pract Res Clin Rheumatol*. 2020; 34: 101548.

35. Dahl-Popolizio S, Roman G, Trembath F, Doebbeling B, Concha-Chavez A. Occupational therapy in primary care-barriers, pivots, and outcomes: A pilot study. *Internet J Allied Health Sci Pract.* 2021; 19: 16.
36. Rider J, Smith K. Persistent pain. *Primary care occupational therapy: A quick reference guide.* New York: Springer Publishing; 2023. pp. 387-400.
37. Smith K, Dahl-Popolizio S, Royeen L, Koverman B. Overview of occupational therapy in primary care. *Primary care occupational therapy: A quick reference guide.* New York: Springer Publishing; 2023. pp. 7-13.
38. American Occupational Therapy Association. Occupational therapy practice framework: Domain and process (4th ed.). *Am J Occup Ther.* 2020; 74: 7412410010p1-7412410010p87.
39. American Occupational Therapy Association. Standards of practice for occupational therapy. *Am J Occup Ther.* 2021; 75: 7513410030.
40. American Occupational Therapy Association. Position statement: Role of occupational therapy in pain management. *Am J Occup Ther.* 2022; 75: 7513410010.
41. Centers for Disease Control and Prevention & Centers for Medicare and Medicaid Services [CMS]. Chronic pain experience [Internet]. United States: CMS. n.d. Available from: <https://www.cms.gov/files/document/cms-chronic-pain-journey-map.pdf>.
42. Breeden K, Rowe N. A biopsychosocial approach for addressing chronic pain in everyday occupational therapy practice. *OT Pract.* 2017; 22: CE-1-CE-8. Available from: https://myaota.aota.org/shop_aota/product/CEA0717.
43. Reeves L, Sako M, Malloy J, Goldstein A, Bennett K. Role of occupational therapy in comprehensive integrative pain management [Internet]. North Bethesda: American Occupational Therapy Association; 2022. Available from: <https://www.aota.org/practice/practice-essentials/quality/quality-resources/role-of-ot-pain-management>.
44. Skelly AC, Chou R, Dettori JR, Turner JL, Rundell SD, Fu R, et al. Noninvasive nonpharmacological treatment for chronic pain: A systematic review update. Rockville: Agency for Healthcare Research and Quality; 2020. doi: 10.23970/AHRQEPCCER227.
45. Dueñas M, Ojeda B, Salazar A, Mico JA, Failde I. A review of chronic pain impact on patients, their social environment and the health care system. *J Pain Res.* 2016; 9: 457-467.
46. Haack M, Simpson N, Sethna N, Kaur S, Mullington J. Sleep deficiency and chronic pain: Potential underlying mechanisms and clinical implications. *Neuropsychopharmacol.* 2020; 45: 205-216.
47. Sullivan MJL, Bishop SR, Pivik J. The pain catastrophizing scale: Development and validation. *Psychol Assess.* 1995; 7: 524-532.
48. Reid GJ, Gilbert CA, McGrath PJ. The pain coping questionnaire: Preliminary validation. *Pain (Amsterdam).* 1998; 76: 83-96.
49. Waddell G, Newton M, Henderson I, Somerville D, Main CJ. A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain.* 1993; 52: 157-168.
50. Carver CS. You want to measure coping but your protocol's too long: Consider the Brief COPE. *Int J Behav Med.* 1997; 4: 92-100.

51. Rodrigues F, Figueiredo N, Rodrigues J, Ferreira R, Hernández-Mendo A, Monteiro D. A comprehensive review and bifactor modeling analysis of the Brief COPE. *Inquiry*. 2022; 59: 469580221108127.
52. Kosek E, Cohen M, Baron R, Gebhart GF, Mico JA, Rice AS, et al. Do we need a third mechanistic descriptor for chronic pain states? *Pain*. 2016; 157: 1382-1386.
53. Fitzcharles MA, Cohen SP, Clauw DJ, Littlejohn G, Usui C, Häuser W. Nociplastic pain: Towards an understanding of prevalent pain conditions. *Lancet*. 2021; 397: 2098-2110.
54. Matthias MS, Parpart AL, Nyland KA, Huffman MA, Stubbs DL, Sargent C, et al. The patient-provider relationship in chronic pain care: Providers' perspectives. *Pain Med*. 2010; 11: 1688-1697.
55. Louw A, Zimney K, Puentedura EJ, Diener I. The efficacy of pain neuroscience education on musculoskeletal pain: A systematic review of the literature. *Physiother Theory Pract*. 2016; 32: 332-355.
56. Davis C, Gillard M. Addressing self-stigma in fibromyalgia using pain neuroscience education: An occupational therapy case study. *Occup Ther Ment Health*. 2023; 39: 436-453.
57. Suso-Martí L, Cuenca-Martínez F, Alba-Quesada P, Muñoz-Alarcos V, Herranz-Gómez A, Varangot-Reille C, et al. Effectiveness of pain neuroscience education in patients with fibromyalgia: A systematic review and meta-analysis. *Pain Med*. 2022; 23: 1837-1850.
58. Joypaul S, Kelly F, McMillan SS, King MA. Multi-disciplinary interventions for chronic pain involving education: A systematic review. *PLoS One*. 2019; 14: e0223306.
59. Gilron I, Blyth F, Madden T, Sharma S. What is an integrative pain care plan? [Internet]. Hong Kong: International Association for the Study of Pain; 2023. Available from: <https://www.iasp-pain.org/resources/fact-sheets/developing-an-integrative-pain-care-plan/>.