THE USE OF BRIEF COGNITIVE BEHAVIORAL THERAPY INTERVENTIONS IN THE TREATMENT OF CHRONIC NON-CANCER PAIN IN THE PRIMARY CARE SETTING

By

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Abstract

As one of the foremost causes of healthcare resource consumption and disability among Canadian adults, chronic non-cancer pain (CNCP) requires significant attention within healthcare delivery and research. While CNCP treatment is typically guided by pharmacotherapeutics, current literature illustrates that Cognitive Behavioral Therapy (CBT) as a CNCP treatment can promote effective pain coping strategies, thereby improving pain and psychosocial outcomes. Cognitive Behavioral Therapy services are constrained, in particular due to limited access and referral to mental health professionals who provide these services. To improve access to CBT services and close gaps in CNCP care, primary care providers could offer brief CBT in their practices. Brief CBT (bCBT) delivered in primary care settings would provide active treatment for CNCP as well as interim treatment for patients awaiting referral to full-service CBT, should that service be required. An integrative literature review has been conducted to identify if Nurse Practitioners, who work in primary care settings, can deliver bCBT to improve outcomes in CNCP patients. The results are discussed within the context of British Columbia (BC) primary care practice. Twelve articles were reviewed using Whittemore and Knafl's approach to the integrative literature review. Results suggest that providers not trained in specific mental health interventions can deliver bCBT to improve CNCP outcomes. Primary care providers are encouraged to seek out opportunities for employing bCBT to gain skill and confidence in providing this treatment. This way, providers can offer multimodal CNCP treatment while also playing an important role in improving access to CBT services. Recommendations for enhancing care of CNCP with bCBT are discussed, and specific strategies for its use in primary care are presented.

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Glossary

Afferent Nerves: the type of nerve that carries sensory nerve impulses from the periphery towards the central nervous system.

Allodynia: a pain resulting from a stimulus (such as a light touch of the skin), which would not normally provoke pain.

Brief Cognitive Behavioral Therapy: the compression of CBT material and the reduction of the average 12-20 sessions into four to eight sessions, or shortened sessions of 10-30 minutes.

Central Nervous System: consists of spinal cord and brain; also responsible for integrating sensory information and responding accordingly.

Chronic Non-Cancer Pain: a pain persisting beyond three months, which is not associated with cancer or the end of life.

Cognitive Behavioral Therapy: a form of psychotherapy based on the notion that thought distortions and maladaptive behaviours play a role in psychological disorders. The focus is on developing coping strategies and changing unhelpful thoughts, beliefs and attitudes. It is the most widely used therapy for treating depression in adults, but does have application for the treatment of chronic pain condition.

Cranial Nerves: the nerves of the brain, which emerge from or enter the skull (the cranium), as opposed to the spinal nerves, which emerge from the vertebral column. The 12 cranial nerves include: olfactory, optic, occulomotor, trochlear, trigeminal, abducent, facial, vestibulo-cochlear, glossopharyngeal, vagus, accessory, and hypoglossal.

Dysesthesia: an abnormal unpleasant sensation felt when touched, caused by damage to peripheral nerves.

Efferent Nerves: a nerve that conveys impulses from the central nervous system toward or to muscles or glands.

First Order Nerves: nerves that synapse with neurons of another type called lower motor neurons, which can carry messages to the muscles of the rest of the body.

Ganglia: a mass of nerve tissue containing cell bodies of neurons external to the brain or spinal cord.

Homunculus: a distorted representation of the human body, based on a neurological "map" of the areas and proportions of the human brain dedicated to processing motor functions, or sensory functions, for different parts of the body.

Hyperalgesia: increased sensitivity to pain or enhanced intensity of pain sensation.

Hyperesthesia: an abnormally acute sense of pain, heat, cold, or touch as increased sensitivity to stimulation.

Hyperpathia: an exaggerated and prolonged painful sensation in response to a normally innocuous stimulus.

Hypothalamus: a region of the forebrain below the thalamus that coordinates control of body temperature, thirst, hunger, and other homeostatic systems; also involved in sleep and emotional activity.

Nurse Practitioner: are Advanced Practice Nurses (APN) that are licensed by the British Columbia College of Nursing Professionals in the classification Nurse Practitioner. Nurse Practitioners provide comprehensive clinical care including the diagnosis and management of disease/illness, prescribing medications, ordering/interpreting laboratory/diagnostic tests, and initiating referrals to specialists.

Limbic System: a complex system of nerves and networks in the brain, involving areas near

the cortex concerned with instinct and mood. It controls the basic emotions (fear, pleasure, anger) and drives (hunger, sex, dominance, care of offspring).

Neuropathic Pain: a pain initiated or caused by a primary lesion, dysfunction, of transitory perturbation of the peripheral or central nervous system

Nucleus Raphe Magnus: function is mostly pain mediation; it sends projections to the spinal cord to directly inhibit pain. It releases serotonin when stimulated.

Periaqueductal Grey: primary control center for descending pain modulation. It has specialized cells that suppress pain.

Peripheral Nervous System: the division of the nervous system containing all nerves that lie outside of the central nervous system (CNS). Its primary role is to connect the CNS to the organs, limbs, and skin, allowing the CNS to stimulate a reaction to the provoking stimuli in environment.

Post Central Gyrus: is the location of the primary somatosensory cortex, the main sensory receptive area for the sense of touch. Like other sensory areas, there is a map of sensory space in this location called the sensory homunculus.

Primary Care: first-contact care with a health care professional where the majority of non-acute health problems are treated. It is the principal point of continuing care and/or referral to specialist treatment.

Primary Care Provider: a health care professional, usually a general practitioner or nurse practitioner, who provides primary care.

Reticular formation: plays a central role in the regulation of the state of consciousness and arousal. It consists of a complex network of interconnected circuits of neurons.

Second order nerves: are cranial and spinal nerves. The cell bodies of these neurons are located in the brain stem, but their axons can leave the central nervous system and synapse with the muscles of the body.

Sensory Receptors: is a structure that reacts to a physical stimulus in the environment, whether internal or external. It is a sensory nerve ending that receives information and conducts a process of generating nerve impulses to be transmitted to the brain for interpretation and perception.

Somaesthetic Cortex: region of cerebral cortex receiving the somatic sensory information from the thalamus; is the primary processing mechanism for sensory information from the body surfaces and in deeper tissues like muscles and tendons.

Somatosensory Cortex: receives sensory input from the body. Neurons that sense feelings in skin, pain, visual, or auditory stimuli all send their information to the somatosensory cortex for processing.

Spinal Nerves: any of the paired nerves which leave the spinal cord of vertebrate, supply muscles of the trunk and limbs, and connect with the nerves of the sympathetic nervous system, of which there are 31 pairs.

Spinoreticular Tract: an ascending pathway in the spinal cord. The tract is from spinal cord to reticular formation to thalamus. It is responsible for automatic responses to pain, such as in the case of injury.

Spinothalamic Tract: an ascending pathway of the spinal cord. It is responsible for the transmission of pain, temperature, and crude touch to the somatosensory region of the thalamus.

Thalamus: lies between the cerebral hemispheres on either side of the third ventricle, relaying sensory information and acting as a center for pain perception.

Abbreviations

BCBT: Brief CBT

CBT: Cognitive Behavioral Therapy

CBT-I: Cognitive Behavioral Therapy for Insomnia

CNS: Central Nervous System

FNP: Family Nurse Practitioner

IASP: International Association for the Study of Pain

NP: Nurse Practitioner

NRM: Nucleus Raphe Magnus

PAG: Peri-Aquaductal Grey

PC: Primary Care

PCP: Primary Care Providers

PHC: Primary HealthCare

PNS: Peripheral Nervous System

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Dedications

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Chapter One: Introduction

Chronic non-cancer pain (CNCP) is a complex biopsychosocial phenomenon experienced by people of all demographics worldwide. It is estimated that one in five Canadians suffer from CNCP, making it one of the foremost causes of healthcare resource consumption and disability among Canadian adults (Schopflocher, Taenzer, & Jovey, 2011). Most notably, symptoms of CNCP impede activities of daily living; diminish physical capacity and quality of life; and increase health, social, political, and economic burden on individuals, families, and healthcare systems (Schopflocher et al., 2011). The effective management of CNCP is therefore a major concern for individuals, their families, society, and healthcare providers. Chronic non-cancer pain however, presents unique challenges both physically and psychosocially in terms of approach to treatment and management.

As a child of a CNCP sufferer, I have been privy to the complex biopsychosocial consequences associated with this condition. I witnessed management strategies that were available to my father in the primary care setting and became acutely aware of the management options that were not available due to the rural location of our town. As I move into the role of a primary care provider, this observation has led me to consider if the barriers to CNCP management can be addressed by primary care providers (PCPs) integrating both pharmacotherapeutics and non-pharmacological options, like brief Cognitive Behavioral Therapy (bCBT) into practice. I also wonder if by doing so, PCPS can improve the quality of life and function of those with CNCP.

I began a preliminary literature search for this integrative literature review by gathering information on the biopsychosocial aspects of CNCP, reviewing current primary care management guidelines for CNCP, and identifying barriers and facilitators to care for

CNCP. From this initial review, I found that the primary goal to caring for patients with CNCP is not the elimination of pain, but rather the improvement of function with an emphasis on therapies that target the whole person (Bruehl, 2015). Whole person care refers to management strategies that aim to encompass the individual's physical, psychological, social, and functional well-being (Bruehl, 2015). While attending to the whole person is the primary goal of CNCP care, I discovered that guidelines for CNCP treatment focus largely on pharmacotherapeutics that target physical pain; this treatment option addresses only the physical component of the CNCP experience and negates the other aspects of the whole person (Mills, Torrance, & Smith., 2016).

Cognitive Behavioral Therapy (CBT) is a treatment that can help address all components of the whole person in CNCP. Traditionally employed in the treatment of various mental health conditions, CBT as a CNCP treatment can promote effective pain coping strategies that improves pain, function, and biopsychosocial outcomes (Mills et al., 2016). Cognitive Behavioral Therapy services are constrained, largely due to limited access to mental health providers who provide these services (Schopflocher et al., 2011; Ehde, Dilworth, & Turner, 2014; McHugh, Gordon, & Byrne, 2014). Likewise, significant financial burden can exist for patients seeking access to CBT services (Ehde et al., 2014). Offering condensed and briefly delivered CBT interventions within primary care settings could address these gaps, especially given that primary care is often an initial point of contact for patients seeking healthcare services (Mills et al., 2016).

Primary care refers to the first level of care and usually the first point of contact for Canadians with the healthcare system for receiving medical care and health promotion (Muldoon et al., 2012). According to Mills et al (2016), more than 50% of Canadians with

CNCP receive pain care from their family provider. Canadian CNCP patients are also four times more likely to visit their family provider for pain management than other specialized pain providers (Schopflocher et al., 2011; Mills et al., 2016). It is therefore not surprising that many primary care providers report CNCP care as burdensome, time consuming, and overwhelming (Schopflocher et al., 2011; Mills et al., 2016).

Primary care providers in British Columbia, including Nurse Practitioners (NPs), will inevitably provide care and management to CNCP patients (Schopflocher et al., 2011; Mills et al., 2016). By introducing and offering brief CBT (bCBT) interventions as a treatment option within their primary care practices, NPs can reduce barriers to CBT service access. The use of bCBT interventions within the primary care context would contribute to improved quality of life for the patient; have positive effects on their physical and psychosocial wellbeing, while reducing personal, social, and healthcare burden and costs. There is, however, limited information among the current CNCP guidelines to guide primary care providers for use of bCBT interventions in the context of primary care settings (Bruehl, 2015; Schopflocher et al., 2011). Thus, I developed the following question to guide my research: "Would the integration of bCBT interventions by Nurse Practitioners (NPs), into their primary care practices, improve function in adults with CNCP?"

In this paper, I will analyze and synthesize the current literature related to the benefits of attending to the whole person in adults with CNCP; the role of Nurse Practitioners, who practice in primary care, in managing CNCP; and the use of primary care delivered bCBT. I will employ an integrative literature review (ILR) approach to illustrate that the gap to using bCBT interventions in primary care can be addressed by having NPs, who work within this setting, integrate these interventions into their practice for CNCP treatment.

Chapter two of this paper will address the background and context relevant to this topic by breaking down the research question. The chapter will include an exploration of pain and CNCP anatomical, physiological, and pathological mechanisms; the CBT model and CBT for treatment of CNCP; the use of bCBT interventions in the primary care setting; and the practice context of NPs as primary care providers in the delivery of bCBT to patients with CNCP. Chapter three will outline the approach to this project, describing the literature review methods. In chapter four, the findings from a critical analysis of the literature are discussed. In this chapter, themes found among the literature that address the research question will be analyzed. In chapter five, a synthesis and discussion of the findings, including recommendations for primary care practice will be presented. Finally, the limitations of this paper will be presented and I will highlight areas for further research.

Nurse Practitioners who work in primary care settings will recognize that an integrated multimodal approach to CNCP management is not only achievable within the primary care setting, but also provides CNCP patients with treatment options that would have been delayed or not otherwise offered. Without an integrated approach, sufferers of CNCP are left to grapple with the ambiguity as to why they continue to have pain and why that pain cannot be adequately treated.

Chapter Two: Background and Context

Beyond being a major chronic condition across all demographics worldwide, chronic non-cancer pain (CNCP) affects approximately 15-19% of Canadians, a prevalence that tends to increase in Canada's aging society (Schopflocher et al., 2011; Mills et al., 2016). In Canada, CNCP is linked to significant disease burden including: reduced quality of life, poorer health outcomes, and premature mortality (Mills et al., 2016). It is also one of the most common morbidities to co-occur with other long-term conditions, with eighty-eight percent of CNCP patients also suffering from other chronic illnesses (Mills et al., 2016). In particular, 20–50 % of CNCP patients will also suffer from co-morbid depression, anxiety, and/or insomnia (Mills et al., 2016). As such, individuals with CNCP will make more primary care visits (12.9 visits per year) and have longer hospital stays (3.9 days) than individuals without CNCP (Lalonde et al., 2014). Given the healthcare usage by those with CNCP, significant economic burden exists. As of 2011, CNCP has been associated with an annual cost that exceeds $43 billion dollars (Lynch, 2011; Busse, 2017). Of patients with CNCP, at least 40% being treated in a routine practice setting will fail to achieve functionality (Schopflocher et al., 2011; Mills et al., 2016).

While treatment options for CNCP have historically been unimodal, largely with pharmacotherapeutics, the risk of adverse effects makes long-term pharmacological treatment controversial (Mills et al., 2016). The risk of abuse and overdose-related fatalities associated with opioid analgesics in particular, is especially concerning (Manchikanti et al., 2012; Busse, 2017). Although evidence for the efficacy of opioids in the treatment of severe, post-surgical, or acute pain exists, little evidence supports long-term opioid use in CNCP (Busse,

2017; Clair, 2017). Due to the complex nature of CNCP, unimodal interventions are insufficient in achieving the whole person care approach that CNCP requires.

Multimodal strategies that address the physical, psychological, social, and functional components of CNCP have been shown to be the most efficacious approach to management compared to pharmacotherapeutics alone (Chou et al., 2009; Clair, 2017; Busse, 2017). Substantial literature identifies CBT as a prevailing therapy in CNCP, with an ability to address both the physical and psychosocial components of CNCP (Chou et al., 2009; Clair, 2017; Busse, 2017). However, CNCP practice support guidelines for integrating non-pharmacological treatments like brief CBT (bCBT) into CNCP care are limited (Busse, 2017; Clair, 2017). Those guidelines that are accessible to primary care providers are often geared towards strategies for pharmacotherapeutics management (Chou et al., 2009; Clair, 2017; Busse, 2017). Given that approximately half of patients experiencing CNCP are managed in a primary care setting, it is imperative for primary care providers, like Nurse Practitioners (NPs), to be equipped with strategies and resources for integrating bCBT interventions (Schopflocher et al., 2011; Mills et al., 2016). Through evidence-based practice support guidelines for integration and delivery of bCBT interventions, NPs will have an arsenal of multimodal approaches for CNCP treatment.

This chapter will review the anatomical, physiological, and pathological mechanisms of pain and CNCP, guidelines for CNCP, an overview of CBT, the use of bCBT interventions in primary care settings, and the practice context of NPs as primary care providers.

Pain: Anatomy & Physiology

The basic experience of pain, also known as nociception, is a physiological mechanism for self-protection and survival, which results from both physical and

psychological responses to an injury on the body (Martini, Nath, & Bartholomew, 2015). As experienced by most people, pain is a subjective experience with two interdependent aspects. The first aspect of the pain experience is a localized sensation in a particular body part (Martini et al., 2015). The second aspect is an unpleasant quality of varying severity associated with behaviors directed at relieving or terminating that first aspect (Martini et al., 2015). The basic anatomy and physiology of nociception will be discussed below.

Pain arises from damaged tissue in the peripheral nervous system (PNS) and is conveyed to the central nervous system (CNS). The CNS is comprised of the brain and spinal cord, and is where information is processed and responses to painful stimuli originate. The PNS includes the parts of the nervous system outside of the brain and spinal cord like: cranial and spinal nerves, ganglia, and sensory receptors. While three main nerve fibres exist in the nervous system, only two types are involved in the process of pain: the afferent and efferent nerves. Afferent nerve fibres are described as sensory neurons in the PNS that transduce information concerning mechanical, thermal, and chemical states in the body to the CNS. Efferent nerve fibres differ in that these neurons transmit signals from the CNS to effectors. Effectors are any part of the body that produce a response, such as muscles. Afferent nerve fibres are further described in terms of being first, second, or third order. First order nerve fibres, also known as first order neurons, conduct impulses from cutaneous and sensory receptors to the brain and spinal cord; they are located in the dorsal root ganglion, which are clusters of neurons in the spine (Martini et al., 2015). Second order neurons transmit impulses to the thalamus and the cerebellum; they are located in the dorsal horn of the spine (Martini et al., 2015). Third order neurons conduct impulses to the somatosensory cortex of the cerebellum and are located in the thalamus (Martini et al., 2015).

The process of pain begins when damaged cutaneous or sensory cells in the body release nociceptor-sensitizing substances causing a current to be generated. This is known as an action potential, in which an electrical potential is maintained by the transport of potassium ions into the cell and sodium ions out of the cell (Martini et al., 2015). In response to a stimulus, there is a change in the nerve cell membrane ion permeability. Once above the threshold level, the membrane becomes depolarized. Sodium channels open and sodium enters into the cell, increasing depolarization and causing the membrane potential to increase (Martini et al., 2015). Depolarization spreads along the nerves and action potentials are propagated along the first order neurons into the spinal cord (Martini et al., 2015). The spinal cord connects first order neurons to second order neurons. During the synapse between the first and second order neurons, a number of excitatory neurotransmitters are released. These excitatory substances cause the depolarization of second order afferent neurons, which transmit the pain impulse by ascending to the brain via two major pathways: the spinothalamic tract and the spinoreticular tract (Martini et al., 2015) (see Figure 2.)

In the spinothalamic tract, second order afferent neurons ascend to the thalamus and synapse with third order afferent neurons (Martini et al., 2015). The thalamus is responsible for recognizing how much pain to generate based on the amount of impulses. From the thalamus, third order afferent neurons project to the primary and secondary somatosensory cortex, which consists of the post-central gyrus (Martinin et al., 2015). The somatosensory cortex is organized with a representation of body structures represented upside down, called a homunculus (see Figure 1.) (Martini et al., 2015). Essentially, the third order neurons project the pain impulse to the corresponding part of the body in the somatosensory cortex where the

pain impulse was started. The post-central gyrus is the site where processing of pain localization, intensity, quality, and sensory integration takes place at the conscious level.

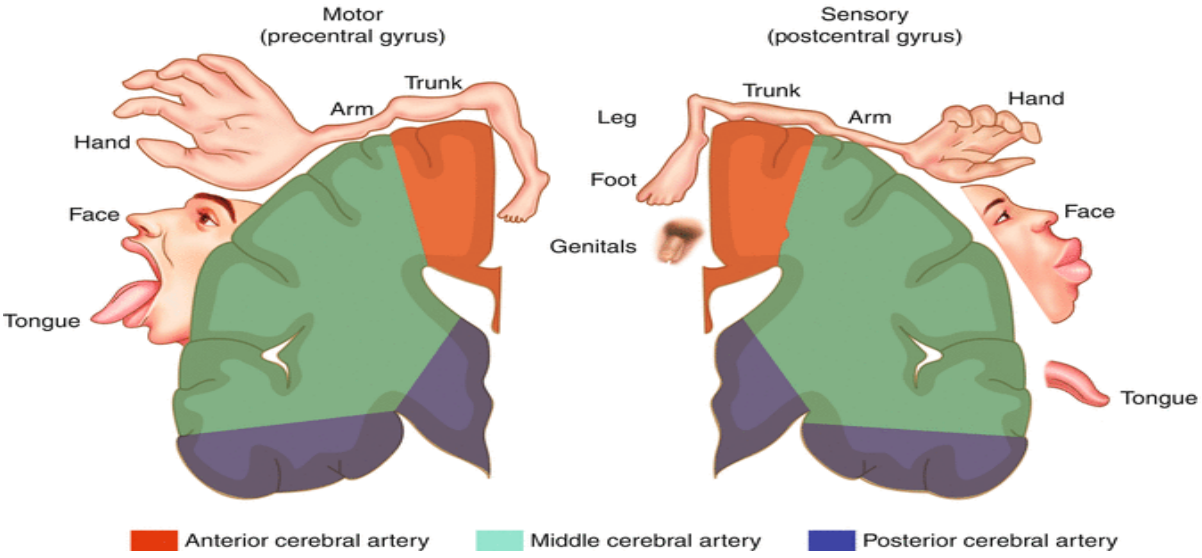

Figure 1. The homunculus of the brain where body structures represented upside down in the somatosensory cortex. Reprinted from *Neurovascular Disease* (pp. 396) by T.M. Gabay & D. Ledet, 2017, Kansas City: Springer. Copyright 2017 by Springer International Publishing AG. Reprinted with permission.

Pain signals relayed from the spinal cord to the reticular formation occur via the spinoreticular tract. This pathway is involved in the emotional aspects of pain (Martini et al., 2015). Second order afferent nerve fibres also ascend the spinal cord to reach the brainstem reticular formation, before projecting to the thalamus (Martini et al., 2015). These signals are transmitted through the spinoreticular tract to the thalamus, which in turn projects to the primary somaesthetic cortex. It also relays information to the hypothalamus and the limbic system (Martini et al., 2015). The projections through the reticular formation function by creating arousal in response to a painful stimuli, whereas the projections to the hypothalamus and limbic system have an important function in the autonomic reflex (i.e. tachycardia), and emotional (i.e. suffering) responses to a painful experience (Martini et al., 2015).

Two important areas of the brainstem are involved in modulating and reducing pain: the periaquaductal grey (PAG) and the nucleus raphe magnus (NRM) (Martini et al., 2015).

Both of these centres contain high concentrations of opioid receptors and endogenous opioids, which when stimulated by an electrical pain impulse produce profound analgesic effects (Martini et al., 2015). A second descending system of serotonin-containing neurons exists. It is thought that the serotonin released by pain stimulation activates inhibitory interneurons and thus, blocks pain transmission in the spinal cord (Martini et al., 2015).

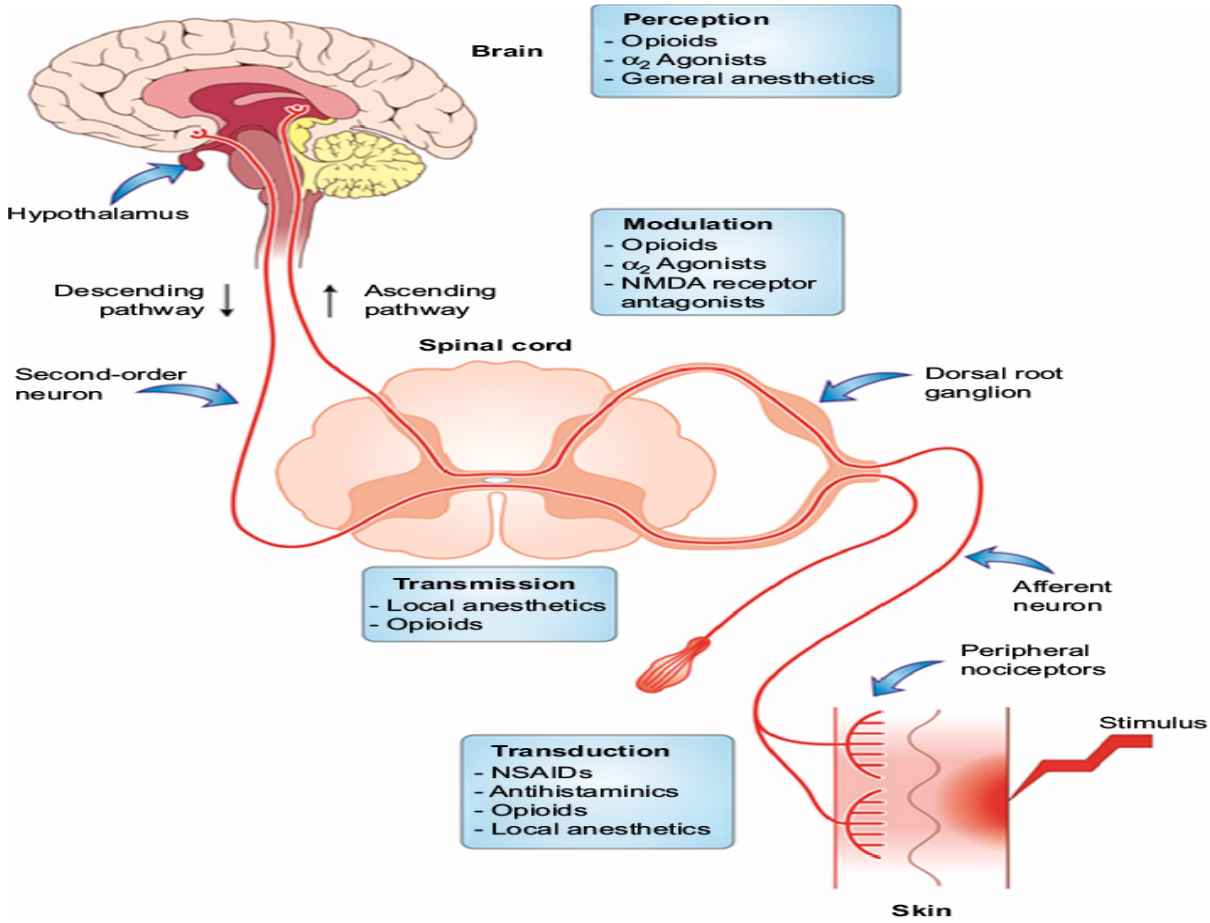

Figure 2. The pain-processing pathway. Reprinted from "Evidence and consensus recommendations for the pharmacological management of pain in India", G.P. Dureja, R.N. Iyer, G. Das, J. Ahdal, & P. Narang, 2017, *Journal of Pain Research*, *10*, pp. 716. Copyright 2017 by Dove Medical Press Ldt. Reprinted with permission.

Some injuries to the body will lead to persistent pain that becomes chronic in nature. Chronic pain serves no purpose and while the exact mechanisms involved in its pathophysiology are complex, some aspects remain unclear (Huether et al., 2014; Martini et

al., 2015). It is therefore important to recognize what chronic pain is and the types that arise from injuries to the body.

Types of Chronic Pain

Chronic non-cancer pain is defined by the International Association for the Study of Pain (2008) as a pain persisting beyond the normal healing time, usually three months or longer, and that is not associated with malignancy, illness, or injury. Fundamentally, chronic pain can be divided into chronic nociceptive and neuropathic pain. Both types of chronic pain will be described below.

Chronic nociceptive pain occurs by two mechanisms: a benign pathology or by cancer cells that grow and crowd other body parts (Martini et al., 2015). This type of chronic pain can be subdivided into: somatic pain and visceral pain, depending on the body location of the chronic pain mechanism. Somatic pain is pain that occurs from the bone, joint, skin, or connective tissue while visceral pain occurs from inflamed or obstructed visceral organs, like the gastrointestinal tract (Martini et al., 2015). Pain that arises from these areas and that persists beyond the expected healing time becomes chronic nociceptive pain. For example, over time and through normal wear and tear, cartilage that surrounds the joints of the spine can become worn out. The joints can then become inflamed and the patient develops osteoarthritis in the spine. That inflammation creates painful movement and can be a source of constant pain. No damage to the nerve or nervous system has occurred, making this type of pain chronic nociceptive pain (Martini et al., 2015).

Neuropathic pain is fundamentally different from chronic nociceptive pain and is much more complex (Martini et al., 2015). This type of pain is generated or sustained by the nervous system; it can either relate to changes in the peripheral or central nervous systems

(Martini et al., 2015). In the peripheral nervous system, there are three main mechanisms to consider: disorders that result in spontaneous firing of damaged nerve fibres, processes that result in oversensitivity of afferent pathways due to denervation (loss of nerve fibre supply), and sympathetically maintained pain whereby the sympathetic nervous system secretes inflammatory substances that sensitize nerve fibres (Martini et al., 2015). Of the processes in the central nervous system, there may be sensitization at the synaptic level or through reorganization of higher processing mechanisms (Martini et al., 2015). Symptoms unique to neuropathic pain include: allodynia, hyperalgesia, hyperpathia, hyperesthesia, and dysesthesia. Under normal circumstances, the pain sensory system returns to a normal functional state as soon as the injury begins to heal. However, many features of sensitization (neuropathic) or chronic inflammation/injury (nociceptive) may persist and will be manifested as chronic pain and CNCP.

Diagnosis of CNCP can be difficult and must be carried out in a systematic manner (Martini et al., 2015). Management of these conditions is very individualized in that what works well for one may not work for the next (Martini et al., 2015). Although practice guidelines for CNCP exist, there are gaps in the support for providers.

Chronic Non-Cancer Pain Guidelines and Practice Resources

Current practice guidelines are fundamental in supporting primary care providers who treat and manage complex chronic conditions like CNCP. Although there are several CNCP guidelines to assist providers in the management of patients with CNCP, significant gaps concerning the integration of non-pharmacotherapeutic options, like bCBT interventions exist within these guidelines.

Current BC guidelines for the management of CNCP in primary care are: The British Columbia Guidelines, which redirects the user to The British Columbia Provincial Academic Detailing (BC PAD) website, The Canadian Guidelines for Opioids for Chronic Non-Cancer Pain, and The Center for Effective Practice Guidelines (BC PAD, 2013; Busse, 2017; Clair, 2017). These guidelines available to BC primary care providers for CNCP management are geared towards reduction management strategies for opioids and pharmacotherapeutics (BC PAD, 2013; Busse, 2017; Clair, 2017). Non-pharmacological interventions are often omitted and when discussed, are brief and geared towards physiotherapy and/or computer delivered CBT interventions (BC PAD, 2013; Busse, 2017; Clair, 2017). They do not offer guidance as to when or who can provide treatments like bCBT or how it can be done within a primary care setting by providers not otherwise trained in specific mental health interventions (BC PAD, 2013; Busse, 2017; Clair, 2017). It is therefore not surprising that primary care providers often report CNCP management as burdensome with concerns regarding inadequate CNCP training, patient prescription abuse, diversion of prescribed opioids, and patient opioid addiction (Mignogna et al., 2014).

Providing CBT in primary care settings can be challenging. As Blount (2009) points out, there are a great number of differences between working as a psychotherapist in a mental health setting versus being a primary care provider delivering specific mental health services. Since 2009, resources and tools have emerged from research that gives providers a framework for providing bCBT within the PC context. In particular, tools in the form of CBT guided manuals and mental health support modules are available to BC PCPs (General Practice Services Committee [GPSC], 2015). Current CNCP guidelines need to reflect the availability of these tools and provide strategies for their implementation in practice.

Likewise, strategies that facilitate implementation of these CBT manuals need to be approachable and feasible within the primary care context.

The Cognitive Behavioral Therapy Model

Cognitive Behavioral Therapy (CBT) is a well-established type of psychotherapy that is traditionally employed in the treatment of mental health conditions like depression and anxiety (Blaine et al., 2013). It also has applicability and efficacy in the treatment of many other conditions like: substance use disorder, insomnia, and chronic pain. Cognitive Behavioral Therapy is aimed at empowering patients by teaching them the skills to challenge and offset their psychological and physical conditions (McGinn, 2000; Baker, 2016). Two aspects of CBT exist: a cognitive aspect and a behavioral aspect.

The cognitive aspect behind CBT is that the patient's thoughts about a situation, not the situation itself, affect how the patient feels and behaves (David, 2010; Baker, 2016). Patients are taught to reframe thoughts and recognize that it is not the situation that causes the patient's feelings and behaviours, but rather the meaning the individual gives to the situation. The behavior aspect of CBT involves strategies that promote behavior activation by identifying and changing behaviors that maintain or worsen symptoms (David, 2010; Baker, 2016). In essence, CBT involves: 1) learning that mood, behaviors, thoughts, and physical reactions are all connected and that changing one will affect the others; 2) learning to recognize thoughts that perpetuate symptoms and challenge them; and 3) behavior activation strategies (David, 2010; Baker, 2016). Patients are educated about specific techniques, such as deep breathing exercises, that they can strategically use on their own when feeling distressed (Baker, 2016).

Altering thoughts and behaviors that perpetuate pain symptoms to thoughts that support positive change in symptoms is a powerful strategy to break the vicious cycle of the behaviors that worsen CNCP. Differing populations, age groups, and patients with psychological and/or physical conditions can find CBT effective (Blaine et al., 2013). When adapted for PC settings, CBT can be an effective treatment for chronic conditions like CNCP.

Cognitive Behavioral Therapy & Chronic Non-Cancer Pain

Cognitive Behavioral Therapy for CNCP is predicated on the notion that to understand pain, the individual must also consider the cognitive and behavioral factors that influence the pain experience (Weisberg & Magidson, 2016). Through CBT interventions, individuals with CNCP can reduce pain, restore loss of function, enhance whole person well-being, and decrease reliance on healthcare systems (Weisberg & Magidson, 2016).

The goal of CBT for pain disorders is to redefine the patient's idea of pain from "pain means tissue damage" to the idea that all pain is perceived as real by the patient, and that multiple factors influence that perception of pain, regardless of whether a physical source is found (Mills et al., 2016). Treatment goals are also to help the patient see themselves as a well person who has pain and to decrease the preoccupation with pain (Mills et al., 2016). Individuals are taught to decrease ineffective behaviours, increase adaptive behaviours, correct ineffective thoughts and beliefs, and increase self-efficacy (Mills et al., 2016). Through this therapy, the patient understands that pain is a stressor and, as with other stressors, coping and adaptation must occur (Mills et al., 2016).

Brain imaging studies have allowed researchers to confirm the positive effects psychological modulation of pain has on brain neuroplasticity (Bushnell et al., 2013). Neuroplasticity is the capacity of the nervous system to change its structure and function in

response to persistent changes in its environment (Bushnell et al., 2013). The following cellular mechanisms underlie neuroplasticity: axonal growth and guidance resulting in the formation of new or restored neuronal networks; synaptogenesis resulting in formation of new synapses; synaptic pruning resulting in the elimination of inappropriate synapses; transmission changes resulting in modulation of synaptic efficacy; and neurogenesis leading to turnover of new neurons in certain brain areas (Bushnell et al., 2013). Learning processes, as those employed in CBT, can be used to build new adaptive pain-coping associations (e.g., pain acceptance, self-efficacy, resilience, paced activity) that serve to promote positive neuroplasticity changes noted above (Bushnell et al., 2013).

Despite the evidence in favour of bCBT type interventions for whole person care in CNCP, bCBT type interventions are not routinely offered in primary healthcare settings (Blaine et al., 2013). As a result, patients who may benefit from bCBT treatments are not able to access this service.

Brief Cognitive Behavioral Therapy Interventions & Primary Care

While patients with CNCP turn to primary care providers for pain management, studies show that a substantial variability exists in the way providers approach and treat CNCP (Mignogna et al., 2014; Schopflocher et al., 2011; Mills et al., 2016). In their 2014 study, Mignogna et al found that primary care providers believe that more than one-half of their CNCP patients are receiving suboptimal care within their practices. As previously noted, bCBT interventions have favourable outcomes in CNCP, but the lack of timely access to mental health professionals and services leaves a large gap in care for CNCP patients.

The availability of pain services including CBT services, drastically varies by community and may depend on the number of local practitioners who have specialized

training and interest in CNCP management (Farmanara, Machildon, & Quesnel-Vallee, 2016). In addition, access to mental health and specialized pain care varies across the province and is often constrained by significantly lengthy wait times (Farmanara et al., 2016). Access to CNCP services is particularly limited for vulnerable and low-income populations and those in rural and remote regions of British Columbia (Farmanara et al., 2016). Not only is CNCP management in the community preferred by most patients, it is also comparatively less expensive than attending interventions in specialized healthcare facilities (Farmanara et al., 2016).

In recent years, CBT methods have been adapted to be deliverable in shorter appointments that are more typical for a clinic practice (Mills et al., 2016). Some of the basic principles and techniques of CBT can be applied even in a ten-minute appointment (Mills et al., 2016). This is known as brief CBT (bCBT). Though short in nature, bCBT provides active treatment to address symptoms of CNCP and can help stabilize symptoms and restore some physical and psychosocial function to the patient while they wait for specialized or comprehensive mental health services, should those services be required (Mills et al., 2016). Primary care providers, like Nurse Practitioners, are in a position to deliver bCBT interventions in the primary care setting.

Nurse Practitioner Role in Primary Care in British Columbia

Nurse Practitioners (NPs) are healthcare professionals who provide access to primary healthcare in Canada. Nurse Practitioners are prepared at a master's degree level, with a growing number of NPs pursuing and completing doctorate degrees (College of Registered Nurses of British Columbia [CRNBC], 2016). Depending on their focus of practice, NPs develop and sustain partnerships with clients of all ages (CRNBC, 2016). With a scope of

practice that often overlaps with the scope of a General Practitioner, Nurse Practitioners provide patients with comprehensive and longitudinal person-focused care (CRNBC, 2016). Nurse Practitioners also provide first contact assessment for new health care needs; and referral and coordination of care when it must be sought elsewhere (CRNBC, 2016). Their competencies within their legislated scope of practice allow NPs to autonomously diagnose conditions, order and interpret diagnostic tests, prescribe pharmaceuticals, and perform specific skills (CRNBC, 2016). Nurse Practitioners also provide patients with counselling, health promotion, and community-based wellness programs (CRNBC, 2016).

The role of Nurse Practitioners who work in primary care is one of the fastest growing advanced practice nursing roles in Canada. In 2018, the government of British Columbia announced the creation of 200 new NP positions to support patients in primary care (British Columbia Government News, 2018). This rapidly evolving role of the NP represents opportunities to overcome some of the identified barriers to implementing bCBT interventions into primary care settings.

Nurse Practitioners have a biomedical knowledge with philosophical underpinnings that align with nursing (CRNBC, 2016). Nurse Practitioners therefore have much foundational knowledge related to health coaching and therapeutic communication skills, as well as parts of CBT itself, perhaps without recognizing them as CBT in nature (CRNBC, 2016; Broderick et al., 2012). For example, strategies that encourage patients to refocus thoughts and behaviors into action items like mindfulness exercises are based on foundations of CBT interventions (Broderick et al., 2012). In other words NPs, as primary care providers, have the foundation on which bCBT intervention skills can build upon.

The provision of whole person care is foundational to the NP's practice; addressing CNCP beyond pharmacological treatments will help to lessen the burden of chronic illness on individual health, families, society, and the healthcare system. Following the steps within the integrative literature review process, a comprehensive literature search was conducted to obtain studies for review, analysis, and synthesis. The methodology for this process will be described in the next chapter.

Chapter Three: Methods

According to Torraco (2005), an integrative literature review is a research approach that reviews, critiques, and synthesizes literature on a specific topic in an integrated way, whereby new frameworks and perspectives on that topic are illustrated. This allows healthcare professionals to generate a complete representation of health and human experiences that are particularly salient to research and practice. I performed an initial review of the literature on CNCP management in the primary care setting to determine where gaps in the evidence existed. Following this primary search, my topic was directed by the question: "Would the integration of bCBT interventions by Nurse Practitioners (NPs), into their primary care practices, improve function in adults with CNCP?" Through a synthesis of the literature, the aim of this review was to generate recommendations for future NP practice.

A literature search was performed following Whittemore and Knafl's (2005) methodological approach by: 1) identifying key terms, 2) searching those key terms in designated search databases, 3) evaluating the results of those searches based on set criteria, and 4) a critical appraisal of the final chosen articles.

Search Term Identification

My literature search began by searching the University of Northern British Columbia library databases: CINAHL (EBSCOhost), Medline (EBSCOhost), PubMed (Ovid), PsychINFO (EBSCOhost), and PsychARTICLE (EBSCOhost). To identify the search terms, I created a concept map (see Appendix A). A concept map can direct the researcher to appropriate databases and verify the need for the study or provide information to refine the research topic (Greenlee & Rice, 2013). Three keywords were identified: chronic non-cancer pain, primary care provider, and brief Cognitive Behavioural Therapy.

The first term identified from the concept map was Concept A: chronic non-cancer pain. I recognized early in this research process that several CNCP conditions exist, and thus, chronic non-cancer pain was searched as a broad term to not shift the research focus to a singular chronic pain condition. Two additional terms were identified as homogenous with CNCP and included: persistent pain, and long-term pain. Because CNCP conditions exert influence on the psychosocial well-being of sufferers, the associated terms depression, anxiety, and insomnia were also evaluated to identify applicable studies. The second term identified by the concept map was Concept B: primary care provider. Due to the overlapping scope of practice that exists between Nurse Practitioners and General Practitioners who work in primary care settings, the terms General Practitioner and Nurse Practitioner were utilized. Finally, Concept C: Cognitive Behavioral Therapy was the last identified term from the concept map. Through an initial survey of the literature, I determined that though CBT is a specific therapy, different delivery approaches exist. Thus, brief CBT (bCBT) and CBT for insomnia (CBT-I) were also included to retrieve applicable studies.

Each term was then searched as a keyword using appropriate truncation and wildcard functions. The option to formulate search terms into MeSH terms within the EBSCOhost databases was used when applicable. Several terms were identified through MeSH headings including: behavioral therapy and cognitive therapy. Subject headings were also exploded to include all relevant subheadings (See Appendix B). To determine which articles would be suitable for the literature review, inclusion and exclusion criteria were established.

Inclusion and Exclusion Criteria

Inclusion and exclusion criteria are the limits placed upon the search based on the research question. The criteria were applied to the search to find the strongest evidence.

Sources published between 2010-2018 were reviewed to capture the full breadth and evolution of research on the topic. These dates illustrate the significant shift in CNCP treatment during the last 10 years and the writing of this paper began in January 2018. English language publications from North America, Australia, New Zealand, and Western Europe were considered to include relevant sociopolitical and cultural study demographics. Study populations of adult women and men aged 19-64 were reviewed to capture adults with CNCP. As the focus of this paper was evaluating adults with CNCP, studies evaluating older adults and pediatric patients were excluded. To keep the study focused, studies were excluded if they involved sub-populations such as students, specific ethnic populations, or immigrants.

Articles were excluded if CBT interventions were delivered solely by mental health professionals. It was important to choose articles where the primary care provider, who is not specialized in mental health intervention training, delivered bCBT in order to address the research question. Articles that had non-primary care type settings were excluded with the exception of two, which I felt were of value in addressing the research question. Studies that focused on CNCP as a broad condition were first choice for selection. Depression, anxiety, and insomnia are frequent sequalae of CNCP, and therefore studies where bCBT was employed in treatment of these conditions were also included. Studies that evaluated: substance use disorder, schizophrenia, and bipolar disorder were excluded as to not shift focus from CNCP.

Search Strategy

The aim of the search strategy was to identify relevant studies and exclude those that were irrelevant (Gillespie & Gillespie, 2003). The search strategy consisted of searching

terms clustered around CNCP, primary care provider, and CBT. Each of these term clusters were translated into the syntax and vocabulary of each database that was searched. Truncation was also utilized to find singular and plural forms of keywords, while wildcards were employed to terms with spelling variations.

Concept A and Concept B were searched through the databases using Boolean AND to create a relationship between the two concepts. Afterwards, the results from that combination were then searched with Concept C using Boolean AND to create a relationship between the first two concepts and Concept C.

A search of the databases yielded a copious 18572 search results. Inclusion and exclusion criteria were applied, leaving the sample total at 517 sources. The use of citation management was applied, yielding a left over total of 499 resources. The remaining sample was reviewed through title scanning with 451 sources being eliminated. Forty-eight articles remained; the abstracts from each were thoroughly reviewed. Following this review, 12 articles met criteria for inclusion in the literature review (See Appendix B).

Approach to Analysis

The next stage of the literature review was the critical analysis of the final selected articles. I completed this analysis through the use of a literature matrix where I inputted each article into a table describing each study's sample, setting, methods, limitations, strengths, and important findings (See Appendix C). The Critical Appraisal Skills Program (CASP) (2013) checklists were used for systematic reviews, randomized control trials (RCTs), case controls, qualitative, and cohort studies to evaluate each corresponding article for rigor, validity, and strength of evidence. The CASP tools were utilized as they provide a framework from which to assess the quality of research and determine strengths and limitations of each

study (CASP, 2013). Each paper's CASP rating are outlined in the literature matrix and can be referred to while reading the following chapter. Three themes emerged from my review of the articles: 1) provider and setting, 2) effective brief CBT interventions: facilitators and barriers, and 3) brief CBT education for providers. The results of this analysis are presented in the next chapter.

Chapter Four: Findings

The purpose of this integrative literature review was to explore the current evidence surrounding the following research question: "Would the integration of bCBT interventions by Nurse Practitioners (NPs), into their primary care practices, improve function in adults with CNCP?" Following a comprehensive search of the literature, 12 articles were selected and included in this review.

The existing body of literature related to brief CBT (bCBT) interventions in the treatment of chronic non-cancer pain (CNCP) was primarily composed of both quantitative and qualitative studies. The quantitative literature employed survey-based and correlational methodologies, whereby trends and patterns concerning pain, depression, anxiety, and function outcomes were examined. Phenomenological and case study methodologies were employed to evaluate data in the qualitative literature. Overall, the participants amongst the studies were: mostly Caucasian, low to middle class, and comprised of adult men and women. Limits to the use of CBT interventions in PC settings for CNCP were identified within this body of literature and will be discussed further below.

Of the twelve articles included in the review, six were conducted in the USA (Broderick et al., 2014; Buysse et al., 2011; Funderburk et al., 2011; Lewis et al., 2013; Mignogna et al., 2018; Richmond et al., 2015); two in Norway (Mathieson et al., 2013; Aschim et al., 2011), one in New Zealand (Junquist et al., 2011); and three from the above countries as well as Australia and the United Kingdom (Knoerl et al., 2015; Hoifodt et al., 2011; Dorflinger et al., 2016). These settings represent similar and relevant sociopolitical, healthcare system, and cultural demographics as Canada. I did acknowledge that limitations concerning generalizability could exist despite the similarities between countries.

The research methods used in the articles are further detailed in the literature matrix and include: three primary randomized control trials (Broderick et al., 2014; Buysse et al., 2011; Junquist et al., 2010), three systematic reviews of RCTs (Hoifodt et al., 2011; Dorflinger et al., 2016; Richmond et al., 2015); one integrative literature review (Knoerl et al., 2015); one pre-post design study (Mignogna et al., 2018), two case-control studies (Funderburk et al., 2011; Mathieson et al., 2013) and two cross-sectional studies (Lewis, 2013; Aschim et al., 2011). All studies were assessed for evidence levels based on Melnyk and Fineout-Overholt's (2015) work, and ranked from one to seven (See Appendix D).

When considering the strengths of the body of literature being considered, there were well-designed RCTs, and other types of studies that had adequate patient sample sizes, were longitudinal, had well-established objective measures for outcomes, and had sound statistical analysis. Some of the limitations among the body of literature included: some studies having a limited sample size, and limitations to population type and generalizability of the results. A more detailed representation pertaining to each study's sample, setting, methods, limitations, strengths, important findings, and CASP scores can be found in the literature matrix in Appendix C and referred to while reading this section.

Through a critical analysis of the findings from each study, the following themes emerged: 1) provider and setting, 2) effective brief CBT: facilitators and barriers, and 3) brief CBT education for providers. This chapter will expand on these themes based on the findings.

Provider and Setting

Provider and setting type were the first themes to emerge from the literature. Nine of the twelve articles found that CBT interventions, in particular those that were brief and/or

adaptable, were successfully employed within the primary care setting by providers who did not have specific mental health intervention training (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2011; Funderburk et al., 2011; Hoifodt et al., 2011; Junquist et al., 2010; Lewis et al., 2013; Mathieson et al., 2013; Mignogna et al., 2018). Mixed findings regarding the efficacy of CBT interventions delivered in PC settings by PCPs was found in one of the twelve articles, though several contributing factors led to these mixed findings; these will be described further below (Dorflinger et al., 2016). The last two of the twelve articles did not remark on the setting type (Knoerl et al., 2015; Richmond et al., 2015).

Setting.

Nine of the twelve studies were completed within a primary care type setting, which was described as a clinic office type setting in a community. The randomized control trial by Junquist et al (2010) was completed within both a primary care clinic and local pain treatment clinic. Given that pain treatment clinics are specialized areas for healthcare delivery, the aspects of data that pertained to the pain clinic setting were omitted. In the integrative literature review by Knoerl et al (2015) and systematic review with meta-analysis by Richmond et al (2015) both studies described the effectiveness of CBT interventions for CNCP by a variety of providers, though a description of the setting type was omitted within both articles. While these two articles did not explicitly describe the setting in which CBT interventions were delivered, both studies illustrated CBT type interventions could be successfully delivered by both those providers specifically trained and those not specifically trained in mental health interventions.

Among the theme of setting, two studies found that reorganization of setting practice was linked to PCP integration of CBT interventions. These changes did not require additional

funding, education, or clinic time, but rather a reorganization of the day-to-day office scheduling. Adapting the primary care setting so that CBT sessions were organized and had sufficient time for consultations and therapy allowed for effective CBT delivery (Aschim et al., 2011; Mignogna et al., 2018). Strategies for reorganization included: scheduling CBT sessions for the last office hours on a particular day, blocking off certain time on certain days of the week, and organizing support staff to prevent session interruptions (phone calls, questions, etc.). Being able to deliver effective CBT interventions through practice reorganization was viewed among the researchers as a contributing factor to improved symptom outcomes in patients receiving CBT treatment (Aschim et al., 2011; Mignogna et al., 2018).

The body of literature demonstrated that overall, CBT type interventions are reasonable and achievable options for CNCP treatment in the primary care setting, especially when settings are reorganized to facilitate CBT integration. By doing so, providers who are not specifically trained in mental health interventions are set up for success in the provision of CNCP management.

Primary Care Providers.

A variety of different providers supply healthcare within the primary care setting. Given the difference amongst each provider's education and practice focus, skills, and competencies, it was important to evaluate which primary care providers delivered the CBT/bCBT type interventions.

Cognitive Behavioral Therapy interventions were delivered by GPs (Aschim et al., 2011; Mathieson et al., 2013; Dorflinger et al., 2016; Hoifodt et al., 2011); primary healthcare therapists, which included counselors and behavioral health therapists who

worked in primary care settings (Lewis, 2013; Funderburk et al., 2011); NPs (Buysse et al., 2011; Jungquist et al., 2010; Broderick et al., 2014) and a variety of providers who were described as: social workers, psychiatrists, and psychologists (Mignogna et al., 2018; Knoerl et al., 2015; Richmond et al., 2015).

While the components of the CBT interventions differed amongst all the studies, seven studies demonstrated that CBT interventions delivered by GPs had effective outcomes among the patients (Aschim et al., 2011; Mathieson et al., 2013; Hoifodt et al., 2011; Richmond et al., 2015; Knoerl et al., 2015; Dorflinger et al., 2016; Mignogna et al., 2018). In the longitudinal cross-sectional study by Aschim et al (2011) 68 General Practitioners underwent CBT course training to provide CBT interventions in their primary care clinics. By doing so, GPs increased patient engagement in CBT activities and improved outcomes in patient depression and anxiety symptoms. The authors concluded that these GPs effectively delivered CBT interventions (Aschim et al., 2011). Mathieson et al (2013) further built upon the study by Aschim et al (2011) by completing a case control study, whereby a CBT manual was developed for GPs to facilitate treatment delivery for patients with anxiety and depression. Mathieson et al (2013) found that with the assistance of CBT manuals (but no formal CBT course) GPs were still able to successfully deliver CBT interventions, thereby improving patient depression and anxiety symptoms.

In an integrative literature review by Knoerl et al (2015), in which thirty-five RCT were reviewed, researchers found that provider (including GPs) delivered CBT interventions improved pain intensity in 43% of their study sample. Forty-three percent of the studies within this review illustrated that providers from a variety of professional, educational, and skills backgrounds can effectively provide CBT to CNCP patients, rather those patients

having to receive CBT treatment solely from a provider specialized in CBT interventions. Two studies built on the work by Knoerl et al (2015) by comparing provider (including GPs) delivered CBT to the usual care and found that when compared to the usual care (exercise & pharmacotherapeutics) provider delivered CBT interventions produced greater positive patient outcomes in their depression and pain (Mignogna et al., 2018; Richmond et al., 2015). A meta-analytic systematic review by Hoifodt et al (2011) found differently from Mignogna et al (2018) and Richmond et al (2015) in that training PCPs to deliver CBT did not enhance effects relative to usual treatment in their study. Though PCP delivered CBT interventions was no more effective than the usual care within this particular study, PCP delivered CBT interventions was still identified an efficacious treatment (Hoifodt et al., 2011).

The article with mixed findings concerning the efficacy of PCP delivered CBT was the systematic review without meta-analysis by Dorflinger et al (2016). Dorflinger et al (2016) found that few studies existed concerning outcomes following PCP delivered CBT interventions and those studies that did exist had mixed findings. Researchers felt the mixed findings were as a result of variability in the studies sample sizes, methodologies, training content and design, and assessment of outcomes (Dorflinger et al., 2016). The authors of this study did identify gaps in the literature concerning outcomes related to PCP delivered bCBT and was included in this review to illustrate these gaps.

Given that an overlap in scope of practice that exists between NPs and GPs who work in primary care settings, it is necessary to illustrate that the findings pertaining to GPs within this review also apply to NPs who practice in primary care settings (American Associate of Nurse Practitioners, 2015). Positive symptom outcomes were identified in three randomized control trials, where NPs delivered CBT interventions in PC settings to patients with

insomnia, and co-occurring CNCP and insomnia (Broderick et al., 2014; Buysse et al., 2011; Junquist et al., 2010). In particular, two studies found that in the primary care setting, NP delivered CBT interventions for insomnia (CBT-I) produced notable improvements in sleep continuance, thereby significantly reducing the patient's insomnia (Buysse et al., 2011; Junquist et al., 2010). Junquist et al (2010) further evaluated the effect of CBT-I on chronic pain outcomes, given the co-occurrence of insomnia and CNCP. Participants within this study, who were double match randomized by a third party, described NP delivered CBT-I as having significantly reduced their pain interference and improved sleep continuance (Junquist et al., 2010).

Buysse et al (2011) built upon the study by Junquist et al (2010) by analyzing the efficacy of CBT-I interventions longitudinally and found that a remission in insomnia symptoms was maintained at 6 months post CBT-I. Similarly, Broderick et al (2014) evaluated longitudinal maintenance of outcomes within their RCT, but elaborated on the abilities of CBT longitudinal maintenance in patients with chronic osteoarthritic pain. Broderick et al (2014) found that NPs were able to provide improvements in fatigue, social functioning, health satisfaction, and decreased use of pain medication by providing CBT interventions up to 12 months post interventions (Broderick et al., 2013).

Two studies found that CBT type interventions delivered by primary healthcare therapists led to improved outcomes in patients with medically unexplained pain symptoms (MUS) and those with depression (Lewis, 2013; Funderburk et al., 2011). These providers were often described within the body of literature as having specific knowledge and skills to provide CBT interventions, making them the most appropriate provider to deliver these interventions. However, findings from these two studies showed that primary healthcare

therapists who were described as being master level trained professionals in specific counseling and mental health services like CBT, encountered challenges and knowledge gaps when providing education and counseling concerning biomedical aspects of the patient's condition (Lewis, 2013; Funderburk et al., 2011).

In the cross-sectional study by Lewis (2013), eight primary healthcare therapists provided CBT interventions to patients with MUS. Of note, providers articulated that they had significant limitations in their knowledge, skills, and abilities to provide appropriate advice, guidance, and recommendations surrounding topics and patient concerns related to the biomedical aspects of the condition. Funderburk et al (2011) conducted a case-control study to evaluate a sample of 180 charts of patients who received CBT type interventions by primary healthcare therapists. The researchers noted that primary healthcare therapists, who were non-prescribers, had difficulties offering education regarding new prescriptions and or/discussing medication adherence, as these skills were identified as outside their competencies as non-prescribing primary healthcare therapists (Funderburk et al., 2011). Based on the findings, primary healthcare therapists are limited in their ability to provide biomedical treatment. The findings illustrate that it is more feasible for NPs and other PCPs to integrate CBT interventions into practice than for primary healthcare therapists to integrate biomedical knowledge into their practice.

This body of literature demonstrated that overall, primary health care providers who are not specifically trained in mental health interventions can effectively deliver CBT interventions within the primary care setting. It was therefore important to evaluate the body of literature to identify the facilitators and barriers that exist for primary care providers integrating CBT interventions into their primary care practices.

Effective Cognitive Behavioral Therapy Interventions: Facilitators and Barriers

Facilitators that improved CBT efficacy and barriers to intervention success emerged as the second theme from the literature. Seven of the twelve articles included in this review evaluated the effectiveness of specific facilitators for CBT intervention success (Jungquist, et al., 2011; Mignogna et al., 2018; Aschim et al., 2011; Funderburk et al., 2011; Broderick et al., 2014; Buysse et al., 2011; Hoifodt et al., 2011). Likewise, seven of the twelve studies analyzed aspects that acted as barriers to CBT intervention success. This theme was explored to demonstrate which strategies amongst the studies promoted bCBT uptake and achieved improvements in patient outcomes. It was also important to show those barriers that arise with bCBT delivery and the available strategies to mitigate those barriers. Four subthemes emerged from this second finding: CBT manual resource, adapting therapy and engaging patients, workbooks and home activities, and brief type interventions. These four subthemes are discussed further below.

Cognitive Behavioral Therapy Manual Resource.

Five of the seven studies demonstrated that bCBT interventions were more easily employed and effective with the use of a CBT practice manual (Mignogna et al., 2018; Funderburk et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Jungquist et al., 2011). Through these manuals providers were guided with an accessible standardized treatment resource tool. Manuals that were adaptable and offered choices for specific interventions and activities/exercises as it pertained to individual patients in particular appointment type settings, facilitated bCBT delivery and encouraged providers to use the manuals (Mignogna et al., 2018; Funderburk et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Jungquist et al., 2011). Providers within the studies by Mignogna et al (2018),

Funderburk et al (2011), Broderick et al (2014), Mathieson et al (2013), and Jungquist et al (2011) also noted that CBT manuals that were clear, had specific treatment focuses; individualized exercises/activities; limited goals; a focus on present stress; rapid assessment; and a high level of provider-patient interaction promoted effective bCBT delivery and encouraged patient participation. By effectively delivering bCBT interventions, researchers noted that patient outcomes were improved (Mignogna et al., 2018; Funderburk et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Jungquist et al., 2011).

Adapting Therapy and Engaging Patients.

Adapting the interventions to meet the needs of the situation and patient was identified as a facilitator to successful therapy delivery and patient engagement among four of the seven studies (Mignogna et al., 2018; Funderburk et al., 2011; Broderick et al., 2014; Mathieson et al., 2013). Adaptation of the interventions was described as: simplifying language within the study's CBT manual, learning how to better pace the content delivered during sessions, and being flexible with manual interventions during sessions (Mignogna et al., 2018; Funderburk et al., 2011; Broderick et al., 2014; Mathieson et al., 2013). In particular, Mignogna et al (2018), Broderick et al (2014), and Mathieson et al (2013) noted that being flexible with the manual by adjusting and choosing particular CBT manual interventions helped promote provider uptake of the therapy and encouraged patient engagement; this led to improve patient outcomes.

Funderburk et al (2011) and Mignogna et al (2018) found that modifying patient assessments to involve patients in discussions regarding their symptoms and treatments was a necessary component of therapy adaptation that led to patient engagement in subsequent bCBT sessions. In particular, providers who inquired about the patient's symptoms, thoughts,

and the behaviors that perpetuated pain; what strategies the patient had previously tried; and those they wanted to try created sessions whereby patients felt heard and validated regarding their condition. This promoted increased acceptance and adherence to subsequent bCBT delivery. Initial provider-patient discussions led to providers being able to deliver a more individualized approach to CBT intervention for their patients. A final adaptation of CBT interventions that facilitated the therapy was engaging the patient face to face (Mignogna et al., 2018). By doing so, providers were able to develop a therapeutic relationship with the patient, making the patient more likely to be engaged in CBT (Mignogna et al., 2018).

Barriers to effective CBT adaptation were identified when providers failed to allot specific amount of session time to address patient concerns not related to CBT interventions. Appointment sessions that did not offer treatment activities to target patient concerns such as relationships and finances led to patients going off topic, which led to reduced bCBT efficacy (Mignogna et al., 2018; Funderburk et al., 2011). Barriers were mitigated by employing closed ended questions to ascertain the nature of the concerns. Closed ended questions helped triage patient issues not related to bCBT interventions so that bCBT sessions were not interrupted, while still acknowledging the patient's concerns and the need to address those concerns at a subsequent appointment not designated for bCBT (Funderburk et al., 2011).

The findings illustrated that it is important for providers and patients to negotiate and establish the terms of the bCBT session. Engaging in provider-patient discussions concerning the purpose and goals for the sessions, can ensure homogenous expectations for treatment.

Workbooks and Home Activities.

Three of the seven studies described the use of CBT workbooks and home activities as a facilitator that promoted effective bCBT (Mignogna et al., 2018; Hoifodt et al., 2011;

Broderick et al., 2014). In their study, Broderick et al (2014) found that assigning instruction in a new coping skill, guided practice in that skill, and a home practice assignment was an integral component of bCBT that set up for review and problem-solving strategies in the subsequent sessions. Likewise, Buysse et al (2011) suggested that when provided with a specific written prescription for CBT-I, patients were more likely to adhere to those prescriptions, which translated to symptom improvements. Being able to reinforce the bCBT at home was considered to be a significant finding.

A barrier to CBT workbooks and home activities existed when patients were asked to complete homework to reinforce the skills, exercises, and activities learned during the sessions (Mignogna et al., 2018). Patients described feeling that they were being asked to complete 'homework' (Mignogna et al., 2018). This challenged provider's abilities to deliver effective bCBT. A strategy to overcome this barrier was described as setting the expectation at the beginning of treatment that home type activities were important for treatment success, and by referring to them as home activities rather than 'homework' (Mignogna et al., 2018).

Brief Type interventions.

A final subtheme was how CBT interventions were delivered. Five of the seven studies found that interventions with a clear specific treatment focus and limited session goals led to rapid assessment and promoted a high level of provider-patient activity (Mathieson et al., 2013; Broderick et al., 2014; Mignogna et al., 2018; Buysse et al., 2011; Junquist et al., 2010). Among four of those studies, both patients and providers felt that though brief CBT sessions were short in duration (less than traditional 30 minutes), providers were able to pare down session content and deliver salient interventions components (Mathieson et al., 2013; Broderick et al., 2014; Mignogna et al., 2018; Junquist et al., 2010).

Focusing on a couple of teachable skills and a short review of content delivered in the last session facilitated bCBT delivery and helped ensure that content was understood (Mathieson et al., 2013; Broderick et al., 2014; Mignogna et al., 2018; Buysse et al., 2011; Junquist et al., 2010).

Brief type interventions were completed and well tolerated in 92% of the participants in the study by Buysse et al (2011). Though the interventions were described as brief, they were achievable with small, time limited goals including: (1) reducing time in bed; (2) getting up at the same time every day, regardless of sleep duration; (3) not going to bed unless sleepy; and (4) not staying in bed unless asleep (Buysse et al., 2011). Likewise, Broderick et al (2014) also found that NP delivered brief interventions were well tolerated in their participants. Patients reported that short sessions focusing on 1-2 interventions were not overwhelming making bCBT sessions approachable and that the 1-2 interventions were more pertinent to their symptoms, which promoted their engagement in sessions. Mignogna et al (2018) also found in their study that creating brief sessions was also beneficial for the delivering provider. Brief CBT intervention delivery allowed the provider to maintain focus on a particular manual module, thereby preventing them from becoming overwhelmed (Mignogna et al., 2018). By having multiple bCBT sessions, Mignogna et al (2018) also noted that patients had less content to recall from past and current sessions, which facilitated bCBT intervention usage and improved their symptoms.

Use of specific resources/manuals, adaptation, and having brief and achievable interventions can improve the efficacy of CBT intervention delivery. It is therefore necessary to improve access to support resources/tools and training for providers in primary care to promote adoption of bCBT interventions.

Cognitive Behavioral Therapy Education for Providers

The final theme within the literature was related to CBT knowledge and education for primary care providers. The theme of PCP knowledge and education was broken down further into educational opportunities that facilitated CBT use in PC and those that acted as barriers. Six of twelve articles in this review found that education, support, and accessible resources, led primary care providers to regularly employ CBT intervention (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2011; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). These subthemes will be discussed below.

Education Facilitators and Barriers.

Four of the six articles found that education and having access to consultation services with specialized mental health professionals facilitated the uptake of delivery of CBT interventions by PCP in PC settings (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010). Training/education sessions were described in four articles as being broad and varied (see Literature Matrix), but helpful in developing bCBT delivery confidence (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010). Despite being broad and varied, all four studies noted completion of training/education session as then being followed with access to consultations with specialized mental health providers. Primary care providers submitted videos performing CBT sessions with patients for detailed feedback from specialized mental health providers, and were able to consult with the specialized mental health providers for direction when concerns or guidance was needed regarding CBT delivery (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010). All four of the studies identified that having had CBT course training and having access to consultations with

specialized mental health providers as a facilitator that promoted the provider's confidence in providing bCBT interventions (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010).

Mathieson et al (2013) also identified that an important facilitator to the uptake of bCBT delivery by PCPs was for providers to self-reflect on misconceptions surrounding bCBT. In particular, participants noted a strong feeling of bCBT interventions being strictly specific to mental health settings and only provided by specific mental health providers (Mathieson et al., 2013). Misconceptions also existed in that for PCPs to provide bCBT, substantial additional education/training was required. In depth discussions between the providers and the instructors were required for providers to "let go" of those misconceptions (Mathieson et al., 2013). Once the providers were able to reconceive these beliefs they felt more open to learning and delivering CBT type interventions in their own practice (Mathieson et al., 2013).

Aschim et al (2011) alone described barriers to primary care provider delivery of CBT interventions in the context of primary care. Aschim et al (2011) identified certain barriers to uptake of CBT by PCP in PC settings included: the large amount of time to master CBT interventions; the constraints of attending training/supervision during and after clinic hours; having difficulties with changing clinic working style and scheduling, and a lack of educational incentives to attend CBT education/training seminars. Providers were more likely to employ CBT interventions when facilitators were present, while the presence of barriers reduced motivation and incentive to use CBT interventions (Aschim et al., 2011).

To summarize, this analysis has provided a critical review of common themes within the literature gathered on current use of Cognitive Behavioral Therapy interventions for

chronic non-cancer pain by Nurse Practitioners/Primary Care Providers within primary care settings. In consideration of the research question, this analysis considers the factors influencing PCP usage of CBT interventions in primary settings, training facilitators and barriers of CBT, and outcomes of patients with CNCP. The next chapter provides a discussion of these findings. It includes recommendations for clinical practice, implications for NP practice, and limitations and recommendations for future research.

Chapter Five: Discussion

Through this integrative literature review process, I have been guided by the following question "Would the integration of bCBT interventions by Nurse Practitioners (NPs), into their primary care practices, improve function in adults with CNCP?" To answer this research question, I completed a literature search that identified 12 applicable articles for inclusion in this review, whose findings I analyzed in the previous chapter.

Three key findings were identified within the literature analysis to answer the research question and included: provider and setting, effective Cognitive Behavioral Therapy (CBT) interventions, and CBT education for primary care providers. In keeping with the integrative literature review process, this chapter will focus on the synthesis of these key findings from the literature analysis. I will then illustrate how the synthesis of the findings led to the development of recommendations for primary care providers, in particular for Nurse Practitioners, integrating brief CBT (bCBT) interventions into their practices. Following the recommendations, I will discuss the limitations to this integrative literature review and provide direction for future research.

Provider and Setting

Though short in nature, bCBT interventions are an achievable and applicable treatment option for CNCP within primary care settings. However, misconceptions exist regarding a primary care provider's ability to deliver even condensed versions of CBT within a primary care context (Mathieson et al., 2013). These misconceptions contribute to hesitations for integration of bCBT interventions into primary care practices by primary care providers (Mathieson et al., 2013).

Analysis of this body of literature has demonstrated that overall bCBT type interventions are a reasonable and achievable option for CNCP treatment in the primary care setting, especially when settings are reorganized to facilitate bCBT integration (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2011; Knoerl et al., 2015; Richmond et al., 2015; Hoifodt et al., 2011; Junquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018; Lewis, 2013; Funderburk et al., 2011). By doing so, providers who are not specifically trained in mental health interventions are set up for success in the provision of CNCP management.

Setting.

The first finding that emerged from the literature analysis was related to the setting. In particular, several studies within this review found that bCBT intervention success was not dependent on the setting where the interventions were delivered, but rather the way that the practice setting was organized or reorganized to facilitate effective bCBT intervention delivery (Mignogna et al., 2018; Aschim et al., 2011).

According to Aschim et al (2011) changes to practice setting for bCBT delivery does not require additional funding, education, or clinic time but rather a reorganization of the day-to-day office scheduling. Reorganizing the primary care (PC) setting so that adequate time is scheduled for bCBT sessions can facilitate bCBT integration. Reorganizing practice settings could include even the simplest changes to scheduling routines such as: scheduling bCBT sessions for the last office hours on a particular day, blocking off certain time on certain days of the week, or noting in the schedule which appointments are assigned for bCBT sessions (Aschim et al., 2011). By reorganizing practice settings, providers are less likely to be overwhelmed during regular practice days to integrate bCBT sessions or during

the sessions themselves (Aschim et al., 2011; Mignogna et al., 2018). This consideration is especially important for providers new to bCBT intervention delivery. Practice settings reorganized for bCBT sessions allow new providers to hone skills and gain confidence in those interventions without being overwhelmed by schedules or time.

Reorganizing practice settings can also facilitate provider and patient preparation for bCBT sessions (Mignogna et al., 2018). Being aware of upcoming bCBT session days and appointments allows opportunities for providers to prepare for those sessions, reducing the work burden associated with having to deliver bCBT (Mignogna et al., 2018). Patients would also be able to come prepared by knowing ahead of time that their specific day/appointment is for bCBT. This helps mitigate those concerns not related to bCBT, and also provides reassurance to patients with CNCP knowing that pain treatment is accessible. Practice settings reorganized for bCBT sessions also help establish a practice routine whereby interruptions such as phone calls, patient walk-ins, or patient fit-ins are discouraged as time allotted for CBT sessions days/appointments are for CBT sessions alone (Aschim et al., 2011; Mignogna et al., 2018).

By first performing a practice analysis to evaluate if the practice is indeed capable of integrating specific bCBT session days, providers are able to also evaluate if barriers to appointment access will arise for those patients not needing bCBT. If reorganization of practice is not possible within a practice setting, providers should be cognizant that bCBT interventions are still deliverable in non-bCBT designated appointments (Mathieson et al., 2013; Broderick et al., 2014; Mignogna et al., 2018; Buysse et al., 2011; Junquist et al., 2010).

Though bCBT sessions are short in duration (less than traditional 30 minutes), providers are able to pare down session content and deliver salient CBT components in even the briefest of primary care appointments. For example, by focusing on a couple teachable skills and providing a short review of content delivered in the last session, bCBT intervention delivery is facilitated during short appointment times (Mathieson et al., 2013; Broderick et al., 2014; Mignogna et al., 2018; Buysse et al., 2011; Junquist et al., 2010). Likewise, setting aside 5 minutes in the appointment to provide 1-2 bCBT interventions or to review previously delivered interventions can exert meaningful changes in symptom outcomes among patients with CNCP (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018).

Primary Care Providers.

The type of primary care provider was another finding that emerged from the literature analysis. All providers within this body of literature were able to successfully deliver bCBT to patients (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2011; Knoerl et al., 2015; Richmond et al., 2015; Hoifodt et al., 2011; Junquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018; Lewis, 2013; Funderburk et al., 2011). It appears that the ability of the primary care provider to deliver effective bCBT is not solely dependent on their role within primary care, but is dependent on their access and application of appropriate tools, education, and support (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2011; Knoerl et al., 2015; Richmond et al., 2015; Hoifodt et al., 2011; Junquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018; Lewis, 2013; Funderburk et al., 2011). The differences among each primary care providers ability to offer whole person CNCP care and their ability to provide treatment with both pharmacotherapeutics and non-

pharmacotherapeutics contributes to improved outcomes, and thus, function in patients (Funderburk et al., 2011; Lewis, 2013).

Given their training and knowledge, primary healthcare therapists possess the competencies as mental health providers to successfully deliver bCBT interventions and did so among several of the studies (Funderburk et al., 2011; Lewis, 2013). What was significant regarding their role as primary healthcare therapists, was the limitations they had within their knowledge and skills to provide appropriate advice, guidance, and recommendations surrounding patient concerns related to the biomedical aspects of their conditions (Lewis, 2013; Funderburk et al., 2011). These providers also noted difficulties offering education regarding new prescriptions and/or discussing medication adherence, as these skills were identified outside their competencies as non-prescribing primary healthcare therapists (Funderburk et al., 2011; Lewis, 2013). While being able to provide bCBT interventions is important to addressing the whole person, it is often only one component of CNCP care. Many patients will require an integrated approach to also include pharmacotherapeutics (Mills et al., 2016). Being unable to provide education regarding pharmacotherapeutics, let alone prescribe them, creates barriers for patients seeking whole person CNCP care (Lewis, 2013; Funderburk et al., 2011). Likewise, patients with CNCP need to be engaged in an integrated approach involving counseling, education, and assessment concerning their physical, psychosocial, and functional symptoms. Without doing so, CNCP patients are left with incomplete treatment, which may perpetuate their pain and reduce their function.

With the ability to engage patients in assessments, order diagnostic investigations, diagnose medical conditions, and prescribe pharmacological and non-pharmacological treatments as part of regular healthcare for CNCP, Nurse Practitioners (NPs) offer a variety

of options for whole person CNCP care (Aschim et al., 2011; Mathieson et al., 2013; Hoifodt et al., 2011; Richmond et al., 2015; Knoerl et al., 2015; Dorflinger et al., 2016; Mignogna et al., 2018; Broderick et al., 2014; Buysse et al., 2011; Junquist et al., 2010). Nurse Practitioners also have much foundational knowledge related to CBT itself (CRNBC, 2016). In other words, NPs as primary care providers have the foundation on which bCBT intervention skills can build upon and can apply this therapy in practice to provide CNCP patients with complete care.

Several studies within this literature review found that NPs were able to effectively deliver bCBT interventions to patients with CNCP and/or insomnia, with all patients reporting positive and successful outcomes in their symptoms and function following their sessions with the NP (Broderick et al., 2014; Buysse et al., 2011; Junquist et al., 2010). Nurse Practitioner delivered CBT interventions also provided improved longitudinal outcomes (Broderick et al., 2014; Buysse et al., 2011). Considering these findings, it is clear that NPs are not only able to engage patients in bCBT interventions, but they are also able to establish longitudinal therapeutic relationships with their patients.

The body of literature illustrated that overall that bCBT interventions are reasonable and achievable options for CNCP treatment in the primary care setting, especially when settings are assessed to facilitate bCBT integration. By doing so providers who are not specifically trained in mental health interventions are set up for success.

Effective Cognitive Behavioral Therapy Interventions: Facilitators and Barriers

The second finding that emerged from the literature analysis centered on the facilitators and barriers to effective bCBT delivery in primary care settings. When bCBT interventions are effectively delivered in primary care settings, patients are more likely to

have improvements in symptoms, thereby increasing their function (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). Effective delivery of bCBT occurs with the presence of facilitators while the presence of barriers can lead to decreased patient engagement, attendance, and adherence to bCBT (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). Barriers also have overall poorer patient outcomes (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018).

Cognitive Behavioral Therapy Manual Resource.

The use of CBT manuals was described among much of the literature as being a consistent strategy that facilitated the uptake of bCBT interventions in the primary care setting (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). The use of these manuals gives users a stepped approach to teaching, planning, and supporting patients through interventions. An example of a CBT manual that is available to Canadian primary care providers is The Cognitive Behavioral Interpersonal Skills Manual (CBIS Manual) (GPSC, 2015). Education for use of The CBIS manual is also available to primary care providers to help facilitate the manual's integration into their practice. This manual is divided into modules that include: assessment, education, activation, cognition, relaxation, anxiety, and lifestyle. It allows providers to choose the most salient aspects of CBT that are applicable to the patient complaint when time necessitates brevity (GPSC, 2015). The CBIS manual is also available in a variety of languages and has a version for Indigenous populations (GPSC, 2015).

The CBT manual provides PCPs with a resource to refer to when questions

concerning delivery arise (GPSC, 2015). The manual provides a standardized manner in which the interventions are delivered and are based upon recognized components of full-length CBT interventions (GPSC, 2015). Employing CBT manuals helps encourage primary care provider usage of bCBT interventions given the manual's approachability, applicability and ease for use in time limited settings like primary care (GPSC, 2015).

Adapting Therapy & Engaging Patients.

A consistent facilitator to the uptake of bCBT interventions in the primary care setting is the employment of CBT practice manuals (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). Specifically, being able to adapt the CBT manual to meet the needs of the situation, patient, and provider helps facilitate effective bCBT delivery (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). Additional adaptations to the CBT manuals that facilitates effective bCBT is simplifying CBT manual language and pacing the manual interventions based on patient needs (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018).

Cognitive Behavioral Therapy manuals that utilize simple language or allow primary care providers to simplify terms and sentences within the manual are an important adaptation for bCBT delivery (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). Comprehending bCBT terms and jargon can contribute to confusion and may lead to patient disengagement (Mignogna et al., 2018; Mathieson et al., 2013). It is therefore important for providers to employ CBT manuals that are created for public usage so that they are at an appropriate reading/comprehension

level. Doing so can ensure that providers and patients have the same understanding and interpretation of bCBT language and terms. Cognitive Behavioral Therapy manuals that allow providers to deliver interventions in their own words can also help reduce patient-provider confusion while maintaining provider and patient engagement during bCBT sessions (Mignogna et al., 2018; Mathieson et al., 2013). Primary care providers should perform regular check-ins with patients to ensure that content is being understood and that it is being delivered at an appropriate pace.

Another way to adapt the CBT manual for effective bCBT delivery is to pace the interventions based on the patient's needs (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). Providers who are able to pace the bCBT session to meet the needs of the patient have enhanced patient engagement and attendance in bCBT sessions, which can improve symptom outcomes and function (Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010). Recall that patients with CNCP experience daily pain; this may limit their ability to attend even the briefest of CBT sessions or to attend sessions regularly (Mills et al., 2016). It is necessary that providers and patients engage in discussions concerning expectations, goals, and plans for bCBT sessions to develop strategies for pacing sessions that are feasible (Mignogna et al., 2018).

A barrier to effective bCBT adaptation is not allotting a portion of session time to address concerns outside the bCBT sessions (Mignogna et al., 2018; Funderburk et al., 2011). In particular, bCBT sessions that do not allow treatment time to focus patient concerns that are not related to bCBT can lead to patients going off topic or becoming unengaged in bCBT interventions (Mignogna et al., 2018; Funderburk et al., 2011). It is therefore important for

providers to mitigate patient concerns not related to bCBT sessions. This can be done by negotiating the bCBT sessions at the start and during subsequent sessions. Negotiating the session could include establishing the purpose of the sessions, the goals of the patient for sessions, and determining an action plan for each session (Stewart & DeNisco, 2019). Acknowledging the person's concerns regarding their other symptoms is necessary and providers should book follow-up appointments to discuss those concerns.

Home Activities.

To ensure that session content is cemented and for patients to continue to build bCBT skills, it is important to encourage bCBT intervention home activities (Mignogna et al., 2018; Hoifodt et al., 2011; Broderick et al., 2014; Buysse et al., 2011). The use of bCBT intervention home activities is as a facilitator that promotes effective bCBT delivery (Mignogna et al., 2018; Hoifodt et al., 2011; Broderick et al., 2014). Brief Cognitive Behavioral Therapy interventions are treatment approaches that teach patients skills to become their own therapist over time (Mignogna et al., 2018). Patients learn new skills in the therapy sessions, but ultimately much of the change occurs between sessions when patients practice the skills in their own home environment. Home activities do not have to be lengthy; providing one simple intervention at the end of an appointment for patients to practice at home can still have effective outcomes (Mignogna et al., 2018). In their study, Broderick et al (2014) found that assigning home activities including instruction in a new coping skill, guided practice in that skill, and having patients practice assigned activities at home was an integral component of CBT intervention success. Likewise, providing patients with a specific written prescription for CBT interventions can help patients adhere to those prescriptions and skills, which according to the research translates to symptom and function improvements

(Buysse et al., 2011).

It is important to note that a barrier to bCBT home activities exists. When patients are asked to complete home activities to reinforce the skills, exercises, and activities learned during bCBT sessions, patients may perceive that they are being asked to complete 'homework' (Mignogna et al., 2018). A strategy to overcome this barrier is setting the expectation at the beginning of treatment that home activities are important for bCBT intervention success and to refer to them as home activities rather than 'homework' (Mignogna et al., 2018; Hoifodt et al., 2011; Broderick et al., 2014; Buysse et al., 2011). The more a patient practices these activities, the more of a habit they will become (Broderick et al., 2014). Patients who participate in home activities will tend to hold on to their progress over time; this helps make patients adequately prepared for independent bCBT intervention usage (Broderick et al., 2014).

Adaptation, engagement, and the use of specific resources/manuals improves the efficacy of CBT intervention delivery. It is therefore necessary to improve access to resources and tools for primary care providers to promote adoption of CBT interventions.

Cognitive Behavioral Therapy Education for Providers

The final finding that emerged from the analysis surrounded the CBT education and consultation support that promoted primary care provider confidence with bCBT delivery. A common misconception identified among several studies indicated that being able to achieve what providers perceived as confidence in bCBT delivery skills, required lengthy education and training for those providers not specialized in mental health intervention training (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010). However, with appropriate education and support in the form of consultation services,

primary care providers are able to effectively deliver bCBT within their practices (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010).

Several studies found that primary care provider education for bCBT delivery is varied and broad (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010). Yet, in all four of these studies, all providers were able to effectively deliver bCBT interventions to patients (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010). This finding illustrates that the ability to deliver bCBT may not be dependent on type or length of CBT education and training. What also improved the provider's perceived confidence with bCBT delivery was the PCP having access to specialized mental health consultation services. Having access to these services following their education/training provides PCPs with an opportunity to obtain detailed feedback from the specialized mental health providers (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010).

While being critiqued and reassured in one's ability to provide therapy is important for developing bCBT skills and confidence, it is important to note that consistent and regular access to consultations services from specialized mental health professionals may be challenging to obtain. Primary care providers who work in settings with limited access to consultations with mental health professionals are challenged in their ability to obtain feedback and guidance from these specialized professionals. Primary care providers therefore need other resources and tools for support and guidance. Primary care providers can employ tools to develop confidence and skills in bCBT delivery, like a CBT manual. Outcome tools that help validate the efficacy of bCBT, like the Coping Strategies Questionnaire or the Brief Pain Inventory at the start of bCBT intervention sessions, during treatment, and at the end of

treatment can also provide reassurance for providers in their ability to deliver bCBT (Broderick et al., 2014). These tools can also illustrate when patients may need referral to full-service CBT.

Brief Cognitive Behavioral Therapy is indeed feasible and effective in the primary care setting by providers who are not trained in specific mental health interventions. Being able to offer bCBT to treat CNCP ensures that a whole person approach to care is achieved. The recommendations for clinical practice are summarized in Table 1.

Recommendations for Clinical Practice

Based upon the aforementioned findings, I have created a set of recommendations to assist primary care practitioners, including NPs, in the delivery of bCBT for the treatment of CNCP. These recommendations aim to facilitate the primary care provider's ability to integrate bCBT.

Table 1. Recommendations

Recommendations	Barrier	Facilitator	Strategies for Implementation	Evidence
Organizing/Reorganizing Primary Care Practice settings for CBT Sessions	• Reduces appointment availability for other patients not needing bCBT	• Reorganize/organize practices with appointment time/days for bCBT • Recognize not all practices Can accommodate sessions • Employ facilitators for bCBT	• Schedule bCBT for last or a block office hours with clear labelling of appointments • Prepare with CBIS manual • Prepare patients • Employ home activities PRN	• (Mignogna et al., 2018); Aschim et al., 2011)
Primary Care Providers to integrate CBT interventions into Practice	• Primary healthcare therapists have limited ability advise, guide, and educate biomedical topics/concerns. Many do not have prescribing ability	• GPs & NPs scope overlap; both have biomedical knowledge and prescribing ability	• Engage patients provide: counseling, education, and assessments for whole person CNCP • Develop & sustain therapeutic relationships • Provide biomedical treatments, i.e. pharmacotherapeutics • Integrate non-pharmacotherapeutics i.e. bCBT	• (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2011; Knoerl et al., 2015; Richmond et al., 2015; Hoifodt et al., 2011; Junquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018).
Use of CBT Manuals		• Use of CBIS manuals • Gives users a stepped approach to teaching, planning, and supporting patients in bCBT	• Start with 1-2 bCBT interventions • Utilize manual activities for home • Attend training for CBT manual • Choose manuals with clear & concise approach	• (Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018).
Adapt CBT manual and sessions	• Failing to allot bCBT session time to address concerns not related to bCBT interventions	• Adapt CBT manual to meet the needs of the situation, patient, and provider • Negotiate sessions at the start and ongoing during treatment	• Simply CBT manual language • Pace the CBT manual interventions • Review of last session's content • Establish purpose, goals, and action plan of the CBT sessions • Acknowledge concerns not related to bCBT and book follow-up appointment	• (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018)
CBT Home Activities	• Referring to home activities as 'homework'	• Activities cement content & skills • Helps address time constraints in appointments • Home activities as "activities" as needed for bCBT success	• Home activities not lengthy • Provide guided practice in assigned home activities • Provide home activities handouts or written prescriptions	• (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018)
Education and Mental Health Consultation Access	• Access to consultation with mental health specialists may be challenging to obtain	• Consistent available access to consultation with specialized mental health providers	• Use of brief CBT practice manuals • Create bCBT tool box with resources • Employ tools like PHQ-9, GAD-7, and BPI for feedback on bCBT effect	• (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010).

Limitations and Future Research

Combining the data for the purpose of this review was met with some limitations during the literature review process. First, only studies written in the English language that were available via databases were included in the research collection. Applicable studies that were not available in the English language may have be excluded as a result. Second, the evidence in the secondary studies of this literature review combined data from studies conducted in the United States, Australia, New Zealand, the United Kingdom, and Norway. The applicability of evidence from studies conducted outside of Canada must be considered carefully, especially where healthcare systems differ in terms of access, cost, and sociodemographics. Thirdly, this review evaluated a sample population that consisted largely of adult Caucasian male and female patients. Many other patient populations also suffer from CNCP and the associated sequalae, though these populations were not included given the narrow focus of this paper. In particular, patient populations including: pediatric and older adults, immigrants, students, and specific ethnic populations were not included.

In this review, the literature search was conducted by one author, which possibly introduced publication bias or the omission of current relevant papers. In particular, I, as the author of this review, have had lifelong experience with a family member suffering from CNCP. Such experience may have introduced some bias in the interpretation of the literature and the following conclusions. Despite this personal experience, I focused on unbiased interpretation of primary sources as suggested by Whittemore and Knafl (2005).

While this review has illustrated that the use of CBT manuals can facilitate effective bCBT delivery, the literature did not provide direction as to how CBT manuals are implemented into primary care practices. Specifically, this review is limited in its findings to

provide primary care providers with information regarding how, when, and with which CNCP patients and CBT manuals to use in the management of CNCP. Future research is therefore needed concerning strategies for the implementation of CBT manuals by primary care providers in primary care settings. Though the evidence in this paper upholds the hypothesis, the idea that bCBT interventions alone are the solution to CNCP treatment is limiting. Future research relating to CNCP patient outcomes in symptoms and function following multimodal treatments from primary care providers, like Nurse Practitioners, is needed. Finally, the evidence illustrates that access to consultation services with specialized mental health professionals helps encourage provider confidence in bCBT delivery. However, not all primary care providers will have easily accessible consultation services. Future research is therefore needed to illustrate if the effects of using outcome measures like the PHQ-9, GAD-7, and the BPI can help improve provider confidence in bCBT delivery when access to consultation services is limited.

Conclusion

It is estimated that one in five Canadians suffer from CNCP (Schopflocher et al., 2011). With an ability to influence the physical and psychosocial wellbeing of sufferers, adequate and timely access to multimodal CNCP treatments like CBT is paramount. However, access to providers specifically trained in mental health interventions like CBT is limited. By offering bCBT within the primary care setting primary care providers like Nurse Practitioners can improve gaps in CBT service access. Current guidelines for CNCP care are limited in the support they provide for integrating bCBT in primary care. Without adequate support from guidelines and resources, primary care providers will face challenges when offering treatment options for CNCP treatment.

This integrative literature review synthesized recent evidence to answer the following question “Would the integration of bCBT interventions by Nurse Practitioners (NPs), into their primary care practices, improve function in adults with CNCP?” A comprehensive search of the literature was undertaken and 12 studies were selected for this review. The evidence from these 12 articles was critically appraised on the basis of the strengths of the evidence, its relevance to the research question, and to the British Columbia healthcare context. Key findings from this integrative review included: primary care provider and setting, effective CBT intervention delivery, and education for primary care providers.

Based on this review bCBT can be successfully delivered within the primary care setting. Success to effective bCBT delivery is not dependent on the setting where the interventions are delivered, but rather the way that the practice setting is organized or reorganized to facilitate effective bCBT delivery (Mignogna et al., 2018; Aschim et al., 2011). Likewise, it was found that bCBT interventions can be successfully employed by providers who do not have specific mental health intervention training (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2011; Knoerl et al., 2015; Richmond et al., 2015; Hoifodt et al., 2011; Junquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018; Lewis, 2013; Funderburk et al., 2011). With an ability to engage patients in assessments, order diagnostic investigations, diagnose medical conditions, and prescribe pharmacological and non-pharmacological treatments as part of the regular healthcare for CNCP, NPs can offer the whole person care experience that CNCP requires (Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010).

Improvement of symptoms including depression, anxiety, insomnia, and/or pain can be seen when bCBT interventions are effectively delivered, which according to this body of

literature was linked to improved patient function (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). Effective delivery of bCBT occurs with the presence of facilitators while the presence of barriers can lead to decreased patient engagement, attendance, and adherence to bCBT (Aschim et al., 2011; Broderick et al., 2014; Buysse et al., 2012; Jungquist et al., 2010; Mathieson et al., 2013; Mignogna et al., 2018). The availability of education and resources that facilitate bCBT delivery can help promote provider skill and confidence with bCBT. Likewise, when education/resources are supported with access to consultation services from specialized mental health professionals, providers gain more perceived confidence and are more likely to employ bCBT in practice (Aschim et al., 2011; Broderick et al., 2014; Mathieson et al., 2013; Junquist et al., 2010).

Finally, in keeping with the integrative review process, recommendations for future research to build upon were developed. The recommendations included the need for primary care providers to continue to build their knowledge, follow clinical guidelines, practice this paper's recommendations, and lead by example. In conclusion, this review shows that Nurse Practitioners who work in primary care settings have the capacity to facilitate delivery of bCBT, thereby improving biopsychosocial and functional outcomes in patients with CNCP.

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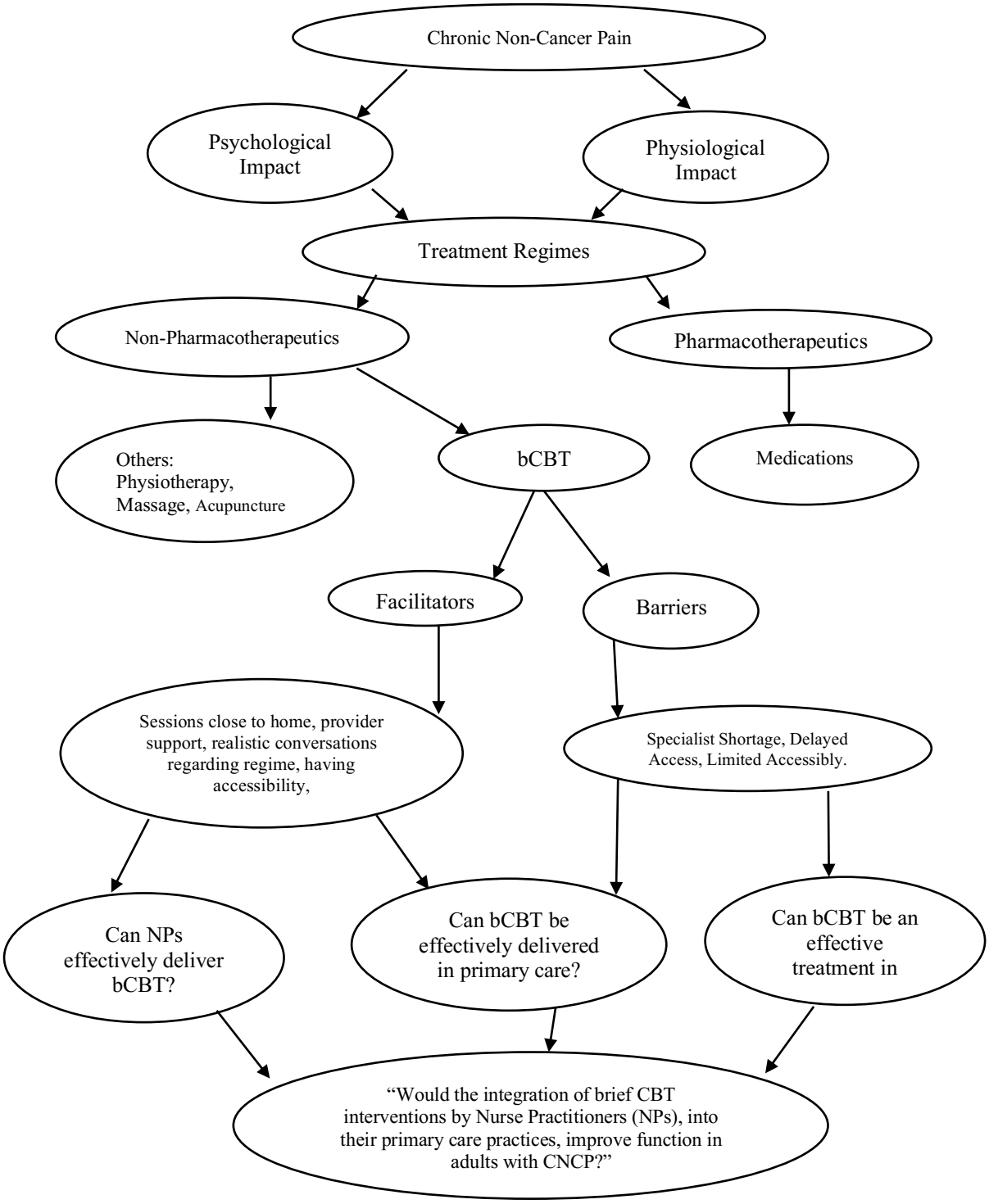
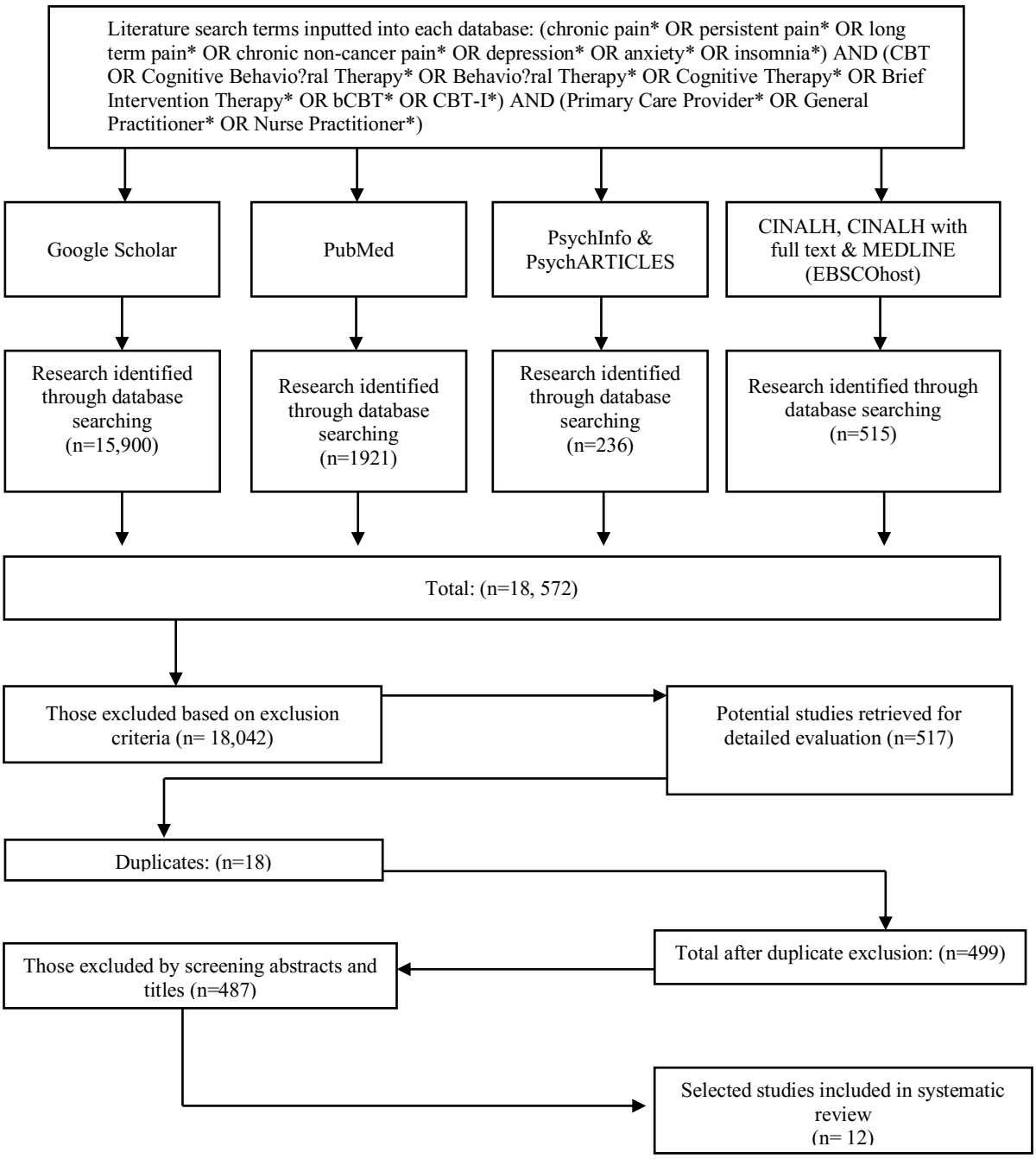
Appendix A


Chronic Non-Cancer Pain
Psychological Impact
Physiological Impact
Treatment Regimes
Non-Pharmacotherapeutics
Pharmacotherapeutics
Others: Physiotherapy, Massage, Acupuncture
bCBT
Medications
Facilitators
Barriers
Sessions close to home, provider support, realistic conversations regarding regime, having accessibility,
Specialist Shortage, Delayed Access, Limited Accessibly.
Can NPs effectively deliver bCBT?
Can bCBT be effectively delivered in primary care?
Can bCBT be an effective treatment in
"Would the integration of brief CBT interventions by Nurse Practitioners (NPs), into their primary care practices, improve function in adults with CNCP?"

Appendix B


Literature search terms inputted into each database: (chronic pain* OR persistent pain* OR long term pain* OR chronic non-cancer pain* OR depression* OR anxiety* OR insomnia*) AND (CBT OR Cognitive Behavio?ral Therapy* OR Behavio?ral Therapy* OR Cognitive Therapy* OR Brief Intervention Therapy* OR bCBT* OR CBT-I*) AND (Primary Care Provider* OR General Practitioner* OR Nurse Practitioner*)
Google Scholar
PubMed
PsychInfo & PsychARTICLES
CINALH, CINALH with full text & MEDLINE (EBSCOhost)
Research identified through database searching (n=15,900)
Research identified through database searching (n=1921)
Research identified through database searching (n=236)
Research identified through database searching (n=515)
Total: (n=18, 572)
Those excluded based on exclusion criteria (n= 18,042)
Potential studies retrieved for detailed evaluation (n=517)
Duplicates: (n=18)
Total after duplicate exclusion: (n=499)
Those excluded by screening abstracts and titles (n=487)
Selected studies included in systematic review (n= 12)

Appendix C

Article/Study Design & Overview	Strengths	Limitations	Utility/Important Findings
Aschim, B., et al. (2011) Cross-sectional longitudinal qualitative study exploring GP's experiences using CBT, and what factors promote or limit its use in the primary care setting Intervention: CBT course that lasted nine months. Fifty hours teaching and 15 hours supervision. Presented video of them performing CBT on patient for feedback	Was a longitudinal study Course completed was accredited CME. Evaluated by certified CBT instructors and psychologists. Objective measures: video tapped focused interviews with free text data comments. Analysis according to principles of Giorgi's phenomenological analysis. Sound description of analysis.	Participants self-selected sample of GPs Sample small- General Practitioners: (N=15) Participants receiving CBT (N=68) Free text data quotes translated from Norwegian to English. Norwegian based; different health system and potentially different GP practice and views on CBT	Promoting: CBT usage in PC settings was structured supervision and group counseling, receiving individual feedback and being able to master therapeutic techniques. Limiting: length of time to master techniques, difficulties finding eligible patients, constraints of time, and lack of financial incentives to use CBT in practice **CASP= High**
Broderick, J.E., et al. (2014). Randomized Control Trial examining the effectiveness of pain coping skills training for patients with osteoarthritis delivered by trained NP in community primary care offices. Intervention: Pain coping strategy therapy. Four broad coping skills were taught across the ten 30- to 45-minute sessions: relaxation response, attention diversion techniques, altering activity and rest patterns as a way of increasing activity level, and reducing negative pain- related thoughts and emotions. The sessions were outlined in detail in a treatment manual	Randomized Control Trial with control group Sample (N= 256) Longitudinal Study Care delivery model using NP to deliver PCST to CP populations, composites for OC measures NPs completed received an initial 2-day training workshop in PCST. Continued training with the instructors at their site to reach competency. Competency determined by specialized therapist based on study established performance scale (1=poor, 5=excellent). Objective Measures: AIMS2, BPI, WOMAC, CSQ, BDI, BFI, IVR, quality of life scale. Compared at base line, post treatment, 6-month and 12-months post. Sound statistical analysis	Convenience sample- assessor blinding compromised Attrition 29% at 12-mos follow up (no difference between groups) Small ES Results may not be generalizable to other CP populations NP provider (N=3) US-based; different health system and potentially different NP practice/education and views on CBT	NP delivered PCST produced significant improvements in a range of pain related variables the use of pain medication compared to the usual care. NP level of proficiency was not associated with level of improvement that patient achieved, but most NPs in study reached moderate to high level competence **CASP= High**

Article/Study Design & Overview	Strengths	Limitations	Utility/Important Findings
Buysse, D.J., et al. (2011) RTC to evaluate the short-term efficacy and 6-month durability of nurse practitioner delivered brief behavioral treatment for insomnia (BBTI) vs an information control (IC) intervention among older adults with insomnia Intervention: BBTI, consisting of individualized behavioral instructions delivered in 2 intervention sessions and 2 telephone calls, or IC, consisting of printed educational material.	Randomized Control Trial Intervention effects followed longitudinally Convergent self-report, observer-rated and physiologic outcomes Sample that is generalizable to practice settings (N=79) Objective Measures: SES Ladder, Charleston Comorbid Index, PSQI, Epworth Sleepiness Scale, The Pittsburgh Sleep Diary. Sound statistical analysis	Convenience sample- assessor blinding compromised Control condition that was not matched for therapist time. The use of a single NP for both conditions (N=1) US-based; different health system and potentially different NP practice/education and views on CBT	Produced statistically and clinical meaningful improvements that were sustained for six months. **CASP= Moderate**
Dorflinger, L.M., et al. (2016). Systematic Review to review the literature on CBT training programs for PCPs, and describe the structure, content, and outcomes of identified studies of which included pre-post and RCT designs.	Strength in being a systematic review. Samples provided variation in adult age, gender, and condition being treated. Recruited from a variety of settings. Good generalizability. Selected PCP from variety of settings including NPs	Small sample: (N=4) RCTs were accepted for the final sample Studies included highly variable Outcomes of patients who received CBT were mixed.	Two studies noted increased frequency of skill use through assessment of PCP case notes. Significant increase in both self-reported knowledge and skills, though two studies found no significant difference in knowledge between pre and post training. Two studies found an increase in reported use of CBT assessment and intervention following training. **CASP= High**
Funderburk, J.S., et al (2011). Case-control study to explore what types of problems Behavioral Health Providers are treating and what types of clinical interventions they are using in PC. Intervention: A chart review was conducted of patients (N = 180) seen by BHPs in five primary care clinics to evaluate which common interventions were used:	Review patient charts of PC participants evaluating demographics, session details such as intervention. Sample participants receiving therapy (N-180) Objective Measures: Charts were reviewed by two advanced clinical psychology doctoral students and one clinical psychologist and all had clinical experience within integrated primary care settings. To establish inter-rater reliability, records	Sample of providers delivering interventions (N=9) Providers had some training in behavioral treatment therapy US-based; different health system and potentially different NP practice/education and views on CBT	BHPs provided treatment to patients with mental health concerns to health psychology interventions for things like pain management. Most common diagnosis seen was depression and anxiety. Prescribing BHP most likely to use medical management. Visits for cognitive and behavioral therapy lengthy than visits in mental health clinics- likely related to the brief nature of visit. Most patients likely to only attend one session, which averaged 41.9 mins. During initial visits

Article/Study Design & Overview	Strengths	Limitations	Utility/Important Findings
medical management, psycho-education, elements of cognitive-behavioral therapy (CBT), and supportive psycho- therapy.	were randomly selected using a random numbers table, and raters were compared Provided thorough review of charts and noted provider characteristics in terms of treatment choices, approaches and follow ups Moderate statistical analysis		brief history and information of presenting problem obtained- much like PCP methods. **CASP= High**
Hoifodt, R.S., et al (2011) Systematic review of quantitative literature on the effectiveness of CBT for depression and anxiety disorders delivered in primary care by primary care therapists.	Total studies included (N=17) RCT Studies (N=13) Natural groups design- longitudinal Samples provided variation in adult age, gender, and condition being treated. Recruited from a variety of settings. Good generalizability.	Evaluated effects of telephone delivered CBT, face to face, or both. Also included CBT +/- antidepressants in assessment. Some patients in studies were younger than 18 years- makes it difficult to generalize to this ILR	Analyses found no significant differences in patient outcomes between groups receiving CBT from trained clinicians and those receiving routine care. CBT self-help with clinical support in PC setting- effective by any PCP (nurse, social worker, or GP) Brief CBT did not outperform treatment as usual. **CASP= High**
Jungquist, C.R., et al. (2010) RCT to study 1) additional evidence regarding the efficacy of CBT-I in treating insomnia in the context of chronic pain and 2) assess whether CBT-I is associated with clinical changes with respect to pain severity and/or pain interference Intervention: The eight weekly session protocol adhered to the regimen specified in our published treatment manual and included 4 central components: Sleep Restriction Therapy, Stimulus Control Instructions, Sleep Hygiene Instructions, and one session of cognitive therapy	Eligible subjects were double-match randomized by a blinded third party until the 16th subject was reached; at that point a stratification procedure according to gender, age and ethnicity occurred. Meta-analytic component employed. Test for initial differences, management of missing data and multiple comparison and false discovery addressed. Objective Measures: Sleep and Pain Diaries, Insomnia Severity Index (ISI), Pain Disability Index (PDI), Multidimensional Pain Inventory (MPI) and the Beck Depression Inventory (BDI). The Epworth Sleepiness Scale (ESS), the Multidimensional Fatigue Index (MFI)	Moderate sample size (N=47) Provider sample size (N=1) 25% attrition rate, and lack of objective sleep and pain measures. Although these limitations. US-based; different health system and potentially different NP practice/education and views on CBT	Seventy-eight percent of the subjects who received CBT-I were designated as treatment responders (vs. 22% of the controls) and 42% were designated as in remission (vs. 11% of the controls). Confirmatory analysis using the Epworth Sleepiness Scale revealed that improved sleep was predictive of decreased daytime symptoms such as excessive daytime sleepiness. The groups did not significantly differ on the mood measures or sleep diary measures of pain. **CASP= High**

Article/Study Design & Overview	Strengths	Limitations	Utility/Important Findings
	Sound statistical Analysis		
Knoerl, R (2015) Integrative literature review to evaluate to determine (a) which CBT doses, delivery methods, strategies, and follow-up periods have been explored in recent intervention studies of individuals with chronic pain and (b) whether the outcomes described in the selected studies were consistent with recommendations. Intervention: CBT	Strength in being an integrative literature review Samples provided variation in adult age, gender, and condition being treated. Selected PCP from variety of settings including NPs, GPs, counsellors, psychiatrists, psychologists, and social workers. Sample size (N=35).	Location of CBT session delivery not described Selected PCP from variety of settings including NPs, GPs, counsellors, psychiatrists, psychologists, and social workers. May not be generalizable to NP practice or primary care practice	CBT reduced pain intensity in 43% of trials. The efficacy of online and in-person formats were comparable **CASP= Moderate**
Lewis, H. (2013) A cross-sectional study to explore and understand primary-care therapists' perceived competence in providing CBT to people with medically unexplained symptoms Intervention: Comprehensive CBT interventions.	Provides a good description of the role for mental specialists to deliver CBT but recognized knowledge was limited.	Small sample (N-8) Not generalizable to CNCP conditions that are well understood US-based; different health system and potentially different NP practice/education and views on CBT	Mental Health CBT Therapists knew little about MUS or CBT application for pain conditions. Engaging patients with CP and MUS crucial- requiring more than 15 min visits. No protocol/literature for CBT application in MUS/CP could be found easily. **CASP= Moderate**
Mathieson, F., et al. (2013) Case review study to develop a brief intervention that would meet the needs of patients with sub-threshold anxiety or depression and be offered by clinicians working in primary care. Intervention: Two-fold 1) two focus interviews were conducted to establish a collaborative CBT manual for PCPs in PC settings then	Thorough critical review of literature before preforming intervention. Evaluation of intervention competency through multiple modes. Outcomes Measures: Nil- discussed effects of PCP delivered CBT in interviews with researchers post intervention	Small provider sample (N=5) Small participant sample (N-14) Not generalizable Confusing study to read No control group Limited statistical analysis New Zealand- based; different health system and potentially different NP practice/education and views on CBT	CBT interventions needed to be brief to be practical and financially viable in PC. Patients rated the sessions as very helpful and practical. There were significant reductions in distress levels for patient (n=14)- no control group to compare. **CASP= Moderate**

Article/Study Design & Overview	Strengths	Limitations	Utility/Important Findings
evaluated the use of that manual in practice with participants			
Mignogna, J. et al. (2018). Pre-post study design to explored providers' perspectives on fidelity to a manualized brief cognitive behavioral therapy (CBT) as delivered in primary care clinics. Interventions: used the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework to evaluate key effectiveness and implementation outcomes	Provider Sample (N=18) Patient Sample (N= 180). Randomized into groups based on number of CBT sessions attended (4, 5, or 6 or more sessions). Sound statistical Analysis Objective Measures: Interviews with providers.	No control group Limited to one primary care setting Summative rather than formative evaluation Collecting one-time interviews at the end of the study most likely limited the scope of providers' responses, given the length of time United States based; different health system and potentially different NP practice/education and views on CBT	The therapeutic relationship, individual patient factors, and system-level factors were critical drivers guiding how providers adapted EBP delivery to improve the "fit" into their clinical practice. Adaptations were generally viewed as acceptable by study fidelity experts and helped to more clearly define delivery procedures to improve future implementation efforts. **CASP= High**
Richmond, M. (2015) Systematic review with meta-analysis to assess whether cognitive behavioral (CB) approaches improve disability, pain, quality of life and/or work disability for patients with low back pain (LBP) of any duration and of any age. Intervention: Cognitive Beahvioral approaches	RCT Studies (N=23) Natural groups design- longitudinal Samples provided variation in adult age, gender, and condition being treated. Recruited from unknown setting Selected PCP from variety of settings including NPs, GPs, counsellors, psychiatrists, psychologists, and social workers. Sound statistical analysis	Location of CBT session delivery not described Selected PCP from variety of settings including NPs, GPs, counsellors, psychiatrists, psychologists, and social workers. May not be generalizable to NP practice or primary care practice	CB interventions yield long-term improvements in pain, disability and quality of life in comparison to no treatment and other guideline-based active treatments for patients with LBP of any duration and of any age. Trials varied considerably in methodological quality, and in intervention factors such as provider, mode of delivery, dose, duration, and pragmatism, there were several examples of lower intensity, low cost interventions that were effective. **CASP= Moderate**

Appendix D

Levels of Evidence
Level 1 - Systematic review & meta-analysis of randomized controlled trials; clinical guidelines based on systematic reviews or meta-analyses
Level 2 - One or more randomized controlled trials
Level 3 - Controlled trial (no randomization)
Level 4 - Case-control or cohort study
Level 5 - Systematic review of descriptive & qualitative studies
Level 6 - Single descriptive or qualitative study
Level 7 - Expert opinion