



Literature Reviews

Cancer Pain Management: Implications for Psychologists

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Abstract

Aim: Pain is a common and a complex experience among patients with cancer. The purpose of this review is to provide a rational for a psychologist's role in cancer pain management and a guide for doing so based on an examination of the current cancer pain literature.

Method: A literature review was conducted using the search terms: "cancer pain" AND "nonpharmacological interventions", "cancer pain", and "pain management" AND "cancer pain". Peer-reviewed articles (published between 2000-2015) in which the authors had access to the full-linked text, books, and websites were included.

Results: A total of 451 hits were returned of which 53 were relevant and considered for this review. These were then organized into the following topics: complex cancer pain syndromes, current cancer physiological therapies, the multifactorial model of cancer pain, psychosocial assessment and interventions, barriers to treatment, and clinical implications that impact the future of behavioural interventions as part of cancer treatment.

Conclusion: Each patient with cancer has a unique pain experience that is shaped by biopsychosocial factors. Because of this, using a multidimensional and multidisciplinary approach is needed to optimize treatment outcomes. To maximize their role, psychologists need to help facilitate this process and to address any attitude and/or knowledge shortcomings they may have.

Keywords: cancer pain, pain management, nonpharmacologic interventions

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Introduction

Pain is a common experience among those diagnosed with cancer (Anderson, 2011; Paice, 2006; Stannard, Kalso, & Ballantyne, 2010). The onset of pain may be the initial concern presented by a patient to their medical provider that, upon investigation of the source of that pain, leads to a cancer diagnosis (Anderson, 2011). It is estimated that 33% of newly diagnosed cancer patients experience pain. This percentage grows to 60-80% as disease and treatment complications cause an increased incidence of pain (Stannard et al., 2010). In addition to the biological mechanisms, psychological and social factors can significantly impact cancer pain (Stannard et al., 2010). In fact, a new mandate from the American College of Surgeons' Commission on Cancer requires cancer centres to screen patients for psychosocial distress (Stringer, 2014). Because of the high occurrence of cancer

pain and its biopsychosocial nature, it is important for clinicians to assess pain dynamically: initially, throughout the treatment process, and when treatment has ended, in order to engage in effective pain management (Anderson, 2011; Paice, 2006).

Ideally, the biopsychosocial assessment and treatment of cancer pain is carried out by multiple providers, each with expertise in one or more of those domains. Due to their expertise in behaviour and mental health, psychologists are frequently included in the cancer pain management process. However, research has suggested that their lack of knowledge and/or negative attitudes can actually have an adverse impact on patient care. For example, in a study by Diamond (2007), psychologists scored well on psychological and behavioural aspects of pain (e.g., coping, cultural influences) but scored poorly in areas related to medical information, medication and addiction issues in pain management, and understanding pain behaviours. This poor knowledge and attitude about pain can inhibit a patient from receiving effective pain care due to the lack of understanding of medical-related issues (Diamond, 2007). The study also revealed that the psychologists who worked in medical settings (e.g., psycho-oncology, palliative/hospice care) had higher knowledge levels and attitudes (in regards to the importance of pain management) when compared to those who did not work in medical settings. This is concerning given that many medical facilities do not have psychologists on staff and must refer behavioural health issues out to specialty mental health settings (Diamond, 2007). It is paramount that individuals working with this population have appropriate knowledge and understanding of the complex needs of patients experiencing cancer. This is especially true for psychologists, who have a unique and crucial responsibility in helping patients manage their cancer pain. Although many hospitals are staffed by medical social workers, these professionals may be tasked with case management duties, which often leaves little time for the treatment of complex psychosocial issues that can impact the patient's experience of cancer pain. Readers interested in the role of social workers in cancer pain management are encouraged to review Glajchen, Blum, and Calder (1995).

The purpose of this theoretical review is to provide a framework and guide for psychologists working with patients experiencing cancer with the goal of enhancing the assessment and management of cancer pain. Upon completion of this review, readers will have an understanding of the multifactorial model of cancer pain, a psychologist's role in the assessment and management of cancer pain, and barriers to treatment. Given that this review is written for psychologists who may lack relevant medical knowledge, an overview of complex cancer pain syndromes and noninvasive therapies is also provided. Readers may find the medical terminology in these sections to be cumbersome. However, psychologists working with patients experiencing cancer are encouraged to become familiar with such terms. In many cases, brief explanations terms have been provided but readers are encouraged to seek additional resources, such as the websites of the professional organizations listed at the end of this review, for further clarification when needed.

Method

The literature review was carried out using the following databases: PsychInfo, PsycArticles, SocIndex, and Medline Plus. The search terms used are as follows: "cancer pain" AND "nonpharmacological interventions", "cancer pain", and "pain management" AND "cancer pain". Peer-reviewed articles (published between 2000-2015) in which the authors had access to the full-linked text, books, and websites were included.

Results

A total of 451 hits were returned of which 53 were relevant and considered for this review. These were then organized into the following topics: complex cancer pain syndromes, current cancer physiological therapies, the multifactorial model of cancer pain, psychosocial assessment and interventions, barriers to treatment, and clinical implications that impact the future of behavioural interventions as part of cancer treatment.

Multifactorial Model of Cancer Pain: The Importance of Multidisciplinary Team Treatment

Cancer pain, and the complications involved in managing that pain, can cause significant distress for patients. The biomedical model addresses the biological mechanisms of pain but often neglects the psychological and social factors that are also present with chronic conditions (Stannard et al., 2010). The multifactorial model of pain focuses on the "...interaction between physical, emotional, cognitive, behavioural, and interpersonal responses to internal and environmental stress" (Figure 1; Crichton & Moorey, 2002, p. 501). Emotional distress manifests in different ways and can be a concurrent problem, the cause of pain, or, more often than not, a consequence of pain. For example, a diagnosis of depression is more likely in patients with lung, gynaecological, breast, colorectal, and genitourinary cancer compared to other types of cancers (Linden, Vodermaier, MacKenzie, & Greig, 2012; Walker et al., 2014). Although psychological disorders such as anxiety or depression can exacerbate the pain experience, positive emotions can actually help manage pain (Satin, Linden, & Phillips, 2009). Despite the prevalence of comorbid emotional distress and the knowledge that emotions can facilitate or inhibit pain these concerns are often neglected in the assessment and management of cancer pain. For example, of the patients surveyed in the Walker et al. (2014) study, 73% of the 1,538 who had been diagnosed with depression were not receiving behavioural health treatment.

Cognition, the third component of the multifactorial model, can serve as a mediator between mood and pain due to its impact on the pain experience via cognitive distortions, perception of control, and interference with activities. Catastrophizing, or assuming that the worst is going to occur, is an example of a cognitive distortion (Crichton & Moorey, 2002). Cancer patients frequently assume that pain means the cancer is progressing, which can lead to feelings of hopelessness and helplessness. Similarly, patients who believe that they have no control over their pain report greater amounts of distress compared to patients who feel a stronger sense of control. Lastly, interference with activities occurs when patients think that cancer will interfere with daily activities and their ability to cope with pain. For example, they may avoid engaging in physical activity because they believe it will result in pain and that the pain will be unbearable. Overall, it is not just pain that can cause difficulties but the meaning patients give to their pain that can determine how well they function in the presence of their pain.

Emotional responses to pain experiences can also affect behaviours (Crichton & Moorey, 2002). For example, a fear of pain can lead to the avoidance of activities such as exercise or vigorous movement of any kind. This can lead to a cycle of inactivity and deconditioning in which the patient focuses on his/her pain and the negative cognitions it brings up (e.g., the belief that it is not safe to be active because it causes more pain). Interpersonal factors of pain can also have a behavioural component. For example, when cancer patients communicate their pain to friends and family, they may do so using pain behaviours such as grimacing, groaning, or sighing. When this occurs, they may be supported in ways that reinforce the pain behaviours as well as their sense of dependence on that support. On the other hand, a lack of social support (or perceived lack of social support) can also heighten the pain experience (Crichton & Moorey, 2002).

The interaction between the five components of the multidimensional model is incredibly complex, reflecting the nature of cancer pain. The above examples provide a glimpse into how this framework can be employed to better understand a patient's pain experience. Another important piece to the model is that it operates within a larger social context and that external stressors affect the patient's ability to manage pain via their impact on the model components (Crichton & Moorey, 2002). External stressors can include the patient's social role(s) (e.g. parent, employee, etc.), life events, and aspects of treatment. For example, being a caregiver (either for young children or older frail adults) while having to attend his or her own frequent medical appointments can cause additional distress. Cancer treatments can also have a positive or negative impact on pain, emotions, and cognition. Reid-Arndt, Yee, Perry, and Hsieh (2009) examined cognitive and psychological difficulties one month following chemotherapy in breast cancer survivors. Cognitive deficits were found in executive functioning and verbal fluency. Poor executive functioning was associated with decreased community involvement and decreased social role functioning. Lastly, having the role of patient, particularly one with a potentially chronic and terminal illness, can be quite burdensome. Cassell (1982) stated that "...suffering occurs when the physical or psychological integrity of the person is threatened" (as cited in Crichton & Moorey, 2002, p. 503).

The skills to address the diverse factors within the multifactorial model of pain are seldom found in one provider. Instead, this model suggests a multidisciplinary team approach for effective patient care (Crichton & Moorey, 2002). The term multidisciplinary has been described as a group of individuals, trained in the use of different tools with an organized division of labour, all working towards a common goal of enhancing cancer pain management (Thinda, 2010). Members of the multidisciplinary team may include a physician (preferably an anaesthetist), a psychologist, a nurse, and a physical therapist (Crichton & Moorey, 2002). Each member examines different aspects of the patient's pain experience and develops individualized treatment plans for his/her own discipline. These plans are then discussed during multidisciplinary team meetings in order to monitor patient progress and foster communication across disciplines. Research indicates the effectiveness of multidisciplinary treatment for pain conditions and is currently the "gold standard" for pain management (Peng, Wu, Sun, Chen, & Huang, 2006; Thinda, 2010; Weis, Bartsch, Nagel, & Unger, 1996). When providers work in different settings, this multidisciplinary approach, though not ideal, can still be achieved via regular communication and shared treatment planning. Psychologists working outside of medical settings are encouraged to facilitate this process and to offer their insight and knowledge to their patients' other providers.

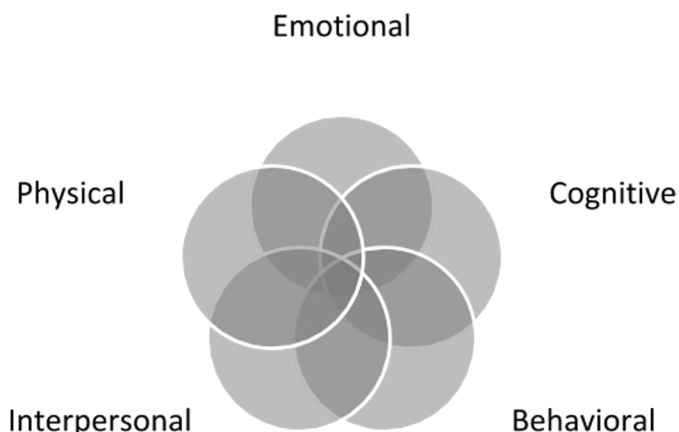


Figure 1. Multifactorial model of cancer pain.

Complex Cancer Pain Syndromes

The development and experience of cancer pain is incredibly complex due to the convoluted interactions between the cancer, how it is treated, and the patients themselves. The multidimensional model of cancer pain provides a framework for conceptualizing cancer pain from a biopsychosocial perspective. This section focuses on the biological domain, labelled as the physical component in the model, and provides an overview of the physiological mechanisms of cancer pain.

Cancer pain can be classified into three broad sources. First, the cancer itself can push up against, or infiltrate, structures in the body causing tissue and nerve damage, intracranial pressure, obstruction of hollow organs, and distension of internal organs (Stannard et al., 2010). This type of pain is usually chronic and it is estimated that 75% of chronic pain experienced by cancer patients is directly related to the tumour (Foley, 2004; Portenoy, 2011). Second, cancer pain can also be caused by the diagnostic (e.g. pathological fractures due to surgical bone biopsy) or therapeutic process (e.g. chemotherapy, radiation) which can lead to chronic and acute pain (Esin & Yalcin, 2014). Lastly, cancer patients may experience pain due to other conditions, such as rheumatoid arthritis or migraine headaches.

The combination of causes of cancer pain make up complex cancer pain syndromes, which can be subdivided into neuropathic, visceral nociceptive, and somatic nociceptive syndromes (Müller-Schwefe et al., 2014). Nociceptors are a specialized sensory nerves located throughout the body's soft tissues. The most common complex cancer pain syndrome is bone pain, a somatic nociceptive syndrome (Paice, 2006; Stannard et al., 2010). This type of pain is caused by bone metastases, or lesions, and is characterized by a prolonged dull ache that can increase in intensity over time. Common areas of bone metastases include spine, pelvic region, ribs, upper arms, and skull. In addition, 8-30% of cancer patients with bone lesions will suffer pathologic fractures (Stannard et al., 2010).

Visceral nociceptive pain syndromes are caused by damage to internal organs such as the thoracic, pelvic or abdominal organs. Intestinal obstruction is a visceral nociceptive pain syndrome common in gynaecological and colorectal cancers (Paice, 2006). This type of pain is often a sign of the advanced cancer process in which the disease prognosis is less than six months.

Neuropathic pain is arguably the most complicated complex cancer pain syndrome (Esin & Yalcin, 2014). Damage, either directly or indirectly, to the neural tissues involved in pain processing can lead to neuropathic pain (Esin & Yalcin, 2014). Patients experiencing this type of pain describe it as "spontaneous burning-like sensations and/or intermittent sharp, stabbing-like pain mostly felt at night, also burning-like pain sensations in a stocking-and-glove pattern" (Esin & Yalcin, 2014, p. 602). In addition to pain, such neural damage can also lead to motor deficits, bladder dysfunction, and loss of proprioception (Neal, Qian, Clinch, & Le, 2014).

Current Cancer Physiological Therapies, Medications, and Noninvasive Therapies

This section provides an overview of the most common pharmacological, physiological, and noninvasive approaches to manage cancer pain as well as recommendations and cautions for their use based on empirical evidence. Although the majority of the treatments discussed fall outside psychologists' scope of practice, the purpose of providing this information is two-fold. First, having knowledge of the patient's treatment experience can facilitate therapeutic alliance by helping the patient feel understood and by limiting the patient's need to spend time educating

the psychologist. Second, knowing the standard recommendations and potential negative side-effects for these treatments the psychologist is equipped to help the patient advocate for appropriate care.

The medical and physiological approaches to manage cancer pain include anti-oncologic therapies, pharmacological therapies, and nonpharmacological therapies (Paice, 2006; Stannard et al., 2010). The two main anti-oncologic therapies used to manage pain are radiotherapy and bisphosphonates. Radiotherapy uses high energy X-rays that lead to cell death in a local (e.g., localized cancer) or wide (e.g., bone metastases) field (Stannard et al., 2010). Drug agents used in radiotherapy, such as strontium-89 and samarium-153, have been shown to be effective in managing bone pain (Paice, 2006). This treatment ultimately leads to shrinkage of the tumour but the exact mechanisms of pain reduction remains unknown. Apoptosis (i.e., cell death) of the tumour cells can lead to healing in the bones. Although it can take months for the bone lesions to heal, pain reduction can be seen as early as a few weeks into treatment (Stannard et al., 2010). Radiotherapy is most effective for managing pain in cancer patients with soft tissue tumours (Stannard et al., 2010). This treatment is contraindicated for cancer patients who have a projected lifespan of less than three months due to the delay of the onset for treatment effectiveness (Paice, 2006). It is estimated that 10% of patients who are treated with strontium-89 may experience a pain flare up; if this occurs, supplementing treatment with an analgesic is recommended (Paice, 2006).

Bisphosphonates are also used as an oncologic therapy for side effects of cancer treatment due to their ability to prevent bone loss (Paice, 2006; Stannard et al., 2010). In this type of treatment, the development of osteoclasts (cells that resorb bone tissue) is inhibited leading to maintained or increased bone density and strength. Bisphosphonates (e.g. pamidronate disodium, zoledronic acid, clodronate, and sodium etidronate) are administered every four weeks and pain reduction effects can be experienced 2 to 4 weeks after treatment is initiated (Paice, 2006). This approach is most effective for managing pain in cancer patients with multiple myeloma and breast cancer and is contraindicated for patients who do not have bone metastases due to its affinity for calcium phosphate (Stannard et al., 2010). It is thought that pain decreases with reduced bone reabsorption and tumour production but the specific mechanisms of this relationship are unknown (Stannard et al., 2010).

Pharmacological therapies for pain reduction in cancer patients include analgesics and co-analgesics (Paice, 2006; Stannard et al., 2010). These can be used to manage cancer pain caused by tumour expansion, neuropathic pain caused by tissue damage, and postoperative pain (Stannard et al., 2010). The classes of medications that will be discussed include nonopioids, opioids, and adjuvant analgesics. Nonopioids include acetaminophen, and nonsteroidal anti-inflammatory drugs (NSAIDs; Paice, 2006; Stannard et al., 2010). NSAIDs are often the “drug of choice” for mild cancer and have demonstrated greater efficacy when compared to placebo for the short-term treatment of cancer pain, including bone and soft-tissue pain (Esin & Yalcin, 2014; Ripamonti, Santini, Maranzano, Berti, & Roila, 2012; Stannard et al., 2010; Swarm et al., 2010). It is recommended that if NSAIDs are to be used long-term, the lowest dose should be used with a gastroprotective agent (e.g., omeprazole; Stannard et al., 2010).

Opioids are the go-to when pain exceeds mild intensity (Esin & Yalcin, 2014). Despite their use when nonopioid analgesics are not satisfactory, there is little evidence that low-dose opioids are more effective than nonopioid treatment (Ripamonti et al., 2012; Swarm et al., 2010). Strong opioids (e.g., morphine, hydromorphone, methadone, and fentanyl) are frequently used for severe pain (Esin & Yalcin, 2014). Providers are often hesitant to use methadone due to its unpredictable half-life as well as the risk of toxicity and accumulation, however monitored use by an experienced physician can be effective (Auret & Schug, 2013; Esin & Yalcin, 2014). Oral morphine is known as the gold standard opioid for cancer pain management and oral transmucosal fentanyl citrate (OTFC)

is effective for the management of breakthrough pain (Stannard et al., 2010). A network analysis revealed that OTFC resulted in a greater reduction in pain in a shorter time frame than oral morphine or a placebo (Zeppetella, Davies, Eijgelshoven, & Jansen, 2014). Tramadol has shown to be promising for cancer patients with moderate to severe pain (Esin & Yalcin, 2014). The most common side effect of opioids is constipation (Esin & Yalcin, 2014). A recent trial demonstrated that combining oxycodone and naloxone may help to safely and effectively ameliorate constipation (Ahmedzai et al., 2012). Toxicity and tolerance are also concerns; however the addictive quality of opioids may be less in patients with moderate-to-severe cancer pain (Minozzi, Amato, & Davoli, 2013).

Adjuvant analgesics, or coanalgesics, are pharmaceutical drugs designed for another purpose but with demonstrated efficacy for pain management when added to opioids (Fallon, Hanks, & Cherny, 2006). These should be added to the regimen when opioid titration is not possible due to adverse side effects or when response has been poor (Esin & Yalcin, 2014). Coanalgesics include antidepressants, anticonvulsants, N-methyl-D-aspartate antagonists (NMDA), corticosteroids, gabapentinoids, cannabinoids and, the previously discussed, bisphosphonates (Esin & Yalcin, 2014; Paice, 2006; Stannard et al., 2010). Tricyclic antidepressants are most effective for cancer pain management and more specifically, neuropathic pain. These analgesics inhibit the reuptake of norepinephrine and serotonin which leads to pain alleviation (Paice, 2006). Because of the delay of onset (e.g., days to weeks) for pain relief, tricyclics are contraindicated for patients with a limited life expectancy. Caution should also be exercised with patients, especially the elderly, who have cardiac problems due to the potential for orthostatic hypotension (a form of low blood pressure; Esin & Yalcin, 2014). The serotonin-norepinephrine reuptake inhibitor (SNRI) duloxetine has shown to be effective in more recent randomized control trials for patients who poorly tolerate tricyclics (e.g., geriatric patients; Stannard et al., 2010). Another SNRI, venlafaxine has been found to be more effective than duloxetine but with more side effects, such as gastrointestinal disturbance and increased blood pressure (Durand & Goldwasser, 2002; Esin & Yalcin, 2014). It has also demonstrated equal benefits to imipramine (a tricyclic antidepressant) (Sindrup, Bach, Madsen, Gram, & Jensen, 2003).

Anticonvulsants are also effective for cancer pain management (Paice, 2006; Stannard et al., 2010). The mechanism of action is characterized by blocking channels that transport pain signals (Esin & Yalcin, 2014; Paice, 2006). These medications are effective for neuropathic pain, pain caused by chemotherapy, as well as for the harsh side effects and pain associated with mucositis (inflammation of the lining of the digestive system often brought on by radiotherapy and chemotherapy; Esin & Yalcin, 2014). The most well-known anticonvulsant used for cancer pain is gabapentin but carbamazepine may be more effective and more cost-efficient (Stannard et al., 2010). In addition, compared to gabapentin, pregabalin has a faster onset of action and demonstrates equal improvements in sleep, quality of life, and daily living abilities in patients with neuropathic pain (Navarro, Saldaña, Pérez, Torrades, & Rejas, 2010). However, no randomized control trials indicating pregabalin's effectiveness for cancer pain management have been published (Stannard et al., 2010). The anticonvulsant N-methyl-D-aspartate antagonist (NMDA) is characterized by blocking "...the binding of excitatory amino acids, such as glutamate, in the spinal cord and brain" (Paice, 2006, p. 95). However, there continues to be an insufficient number of randomized control trials examining NMDA with cancer patients with neuropathic pain (Esin & Yalcin, 2014; Paice, 2006; Stannard et al., 2010).

Topical anti-neuralgics can be a useful adjunct when treating neuropathic cancer pain (Esin & Yalcin, 2014). The use of lidocaine is effective for neuropathy syndromes with allodynia because of its ability to block sodium channels on afferent nerve fibres (Esin & Yalcin, 2014). This method is also convenient due to the absence of systematic absorption and side effects, beyond those that are localized to the application site (Esin & Yalcin, 2014). Capsaicin,

naturally found in chili peppers, can lead to desensitization and, in high doses, is effective in neuropathic pain (Jones, Moore, & Peterson, 2011). However, it can also cause an increase in pain and blood pressure, thus close monitoring is important (Esin & Yalcin, 2014).

Corticosteroids and neuroleptics are both analgesic treatments currently used to treat pain due to nerve compression and headaches in cancer patients despite a lack of scientific documentation reporting their effectiveness (Paice, 2006; Stannard et al., 2010). The mechanism of action is the inhibition of prostaglandin which can reduce oedema in neural tissues (Paice, 2006). One randomized control trial found that the corticosteroid methyl-prednisone provided pain relief for terminally-ill cancer patients (Stannard et al., 2010). Neuroleptics are also used to treat cancer pain but are often met with controversy due to the adverse side effects (Stannard et al., 2010). Chlorpromazine and levomepromazine are used but there is limited scientific evidence establishing these drugs as efficacious. Olanzapine has been found to be effective for cancer pain management in a limited amount of case studies but there is a need for randomized control trials to determine the clinical effectiveness of neuroleptics (Stannard et al., 2010).

In general, the diverse mechanisms involved in cancer pain and the dose-limiting adverse effects severely constrain the potential efficacy of a single pharmaceutical agent (Esin & Yalcin, 2014). Thus, the provider with prescription privileges is faced with the challenge of managing a patient's pain while minimizing the potentially harmful side effects and complications of a polypharmaceutical treatment regimen. Combination treatment will ideally focus on using agents of different but compatible mechanisms to attain maximum benefit with minimum drug interaction and toxicity (Gillon, Jensen, & Dickenson, 2013).

Nonpharmacological/interventional therapies include the following: nerve blocks, vertebroplasty, radiofrequency ablation of painful metastases, transcutaneous electrical nerve stimulation (TENS), massage and acupuncture (Hökkä, Kaakinen, & Pölkki, 2014; Paice, 2006; Stannard et al., 2010). Nerve blocks, vertebroplasty, and radiofrequency have not undergone randomized clinical trials in cancer patients thus these interventions should be used with caution according to the needs of the patient (Paice, 2006). TENS is used to treat mild to moderate cancer pain and is used in combination with pharmacological treatments for moderate to severe pain (Stannard et al., 2010). During treatment electrical currents are moved along the surface of the skin to activate nerves close to the site of pain, essentially with the intention of blocking pain signals (Stannard et al., 2010). Treatment with TENS is contraindicated for patients with pacemakers and bleeding disorders. Although no randomized control trials have proven TENS efficacious for cancer pain, noncontrolled trials and case reports suggest the TENS may be useful for short- and long-term cancer pain management (Stannard et al., 2010).

Acupuncture is a method of inserting needles in the skin at specific points that theoretically manage pain by altering the flow of energy in the individual (Stannard et al., 2010). Specific guidelines have been established for using acupuncture with cancer patients and contraindications include "...clotting dysfunction, needle phobia, and intra-cardiac defibrillators" (electroacupuncture; Stannard et al., 2010, p. 353). Overall, there is a paucity of randomized control trials with strong methodological quality that have examined acupuncture with cancer pain, thus no clear conclusion can be drawn regarding the efficacy of this approach (Garcia et al., 2013).

Lastly, a few studies have examined the use of massage to manage cancer pain with mixed results. The majority of the studies indicate short-term pain relief up to 18 hours after the massage but not sustained relief (Hökkä, Kaakinen, & Pölkki, 2014).

Cancer Pain and Psychosocial Assessment

A comprehensive pain assessment is a critical first step to adequately manage pain in the cancer patient (Anderson, 2011; Giordano, Abramson, & Boswell, 2010). The main role of the psychologist in this process is to integrate information from the patient's providers into a comprehensive pain assessment. This information includes a clinical interview/pain history and a physical assessment (provided by the physician; Crichton & Moorey, 2002). Using standardized pain assessment instruments appropriate for medical patients can provide detailed information about pain severity and impact, coping style, and personality characteristics (Anderson, 2011; Crichton & Moorey, 2002). Because of the context that surrounds cancer pain (e.g., receiving the news about the initial diagnosis, relapse after remission) it is also important for the psychologist to assess for suicide risk (Crichton & Moorey, 2002).

The following instruments have been normed with medical/cancer patient populations (psychometric properties can be found in the instrument development article of each inventory listed below).

Pain Severity/Impact

- The Brief Pain Inventory (BPI; Cleeland, 1989): measures pain severity and pain location in cancer patients;
- Memorial Pain Assessment Card (MPAC; Fishman et al., 1987): visual analog scale that measures pain severity and mood;
- Short-Form McGill Pain Questionnaire (SF-MPQ; Melzack, 1987): measures the sensory and affective aspects of pain;
- European Organization for Research and Treatment of Cancer – Quality of Life Questionnaire (EORTC-QLQ; Aaronson et al., 1993): measures health-related quality of life with subscales that assess functioning and symptoms;
- Functional Assessment of Cancer Therapy – General Version (FACT-G; Cella et al., 1993): measures health-related quality of life with subscales that assess the following: physical and functional well-being, social/family well-being, emotional well-being, and the patient's relationship with the physician;
- Medical Outcomes Study Short Form-36 Health Survey (SF-36; Ware & Sherbourne, 1992): measures health-related quality of life with subscales that assess the following: physical functioning, role functioning, social functioning, mental health, health perceptions, and pain.

Personality/Coping Style

- Battery for Health Improvement 2/Brief Battery for Health Improvement (BHI 2/BBHI 2; Bruns & Disorbo, 2003): assessment of current biopsychosocial issues that impact medical treatment. This scale can also be used to measure severity/impact of pain;
- Minnesota Multiphasic Personality Inventory (MMPI; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989): personality assessment that measures current psychosocial functioning. Currently, the MMPI-2 or MMPI-2- Restructured Form (RF) can be used;
- Multidimensional Pain Inventory/West Haven-Yale Multidimensional Pain Inventory (MDI; Kerns, Turk, & Rudy, 1985): measures the following aspects of pain - pain experience, response of significant others in regards to the patient's pain communication, and daily functioning;

- Millon Behavioral Health Inventory (MBHI; [Millon, Green, & Meagher, 1982](#)): measures medically-related concerns such as compliance and pain treatment responsiveness. This scale is beneficial for treatment team members to better understand personality characteristics that can have a direct impact on treatment outcomes;
- Millon Behavioral Medicine Diagnostic (MBMD; [Millon, Antoni, Millon, & Davis, 2003](#)): measures psychosocial variables such as coping style, the presence of psychiatric conditions, communication style, as well as current health behaviour patterns;
- Symptom Checklist – 90 – Revised (SCL-90; [Derogatis, 1994](#)): measures a broad range of psychological problems which can aid in assessing treatment outcomes.

Psychologists should use their clinical judgment when selecting instruments to incorporate in a comprehensive pain assessment. One procedure that is used when conducting a pain assessment is the stepwise approach ([Gatchel, 2005](#)). This approach is used frequently in chronic pain assessment. A modified version of the approach (based off of Gatchel's stepwise approach; [Figure 2](#)) for assessing cancer pain is provided below:

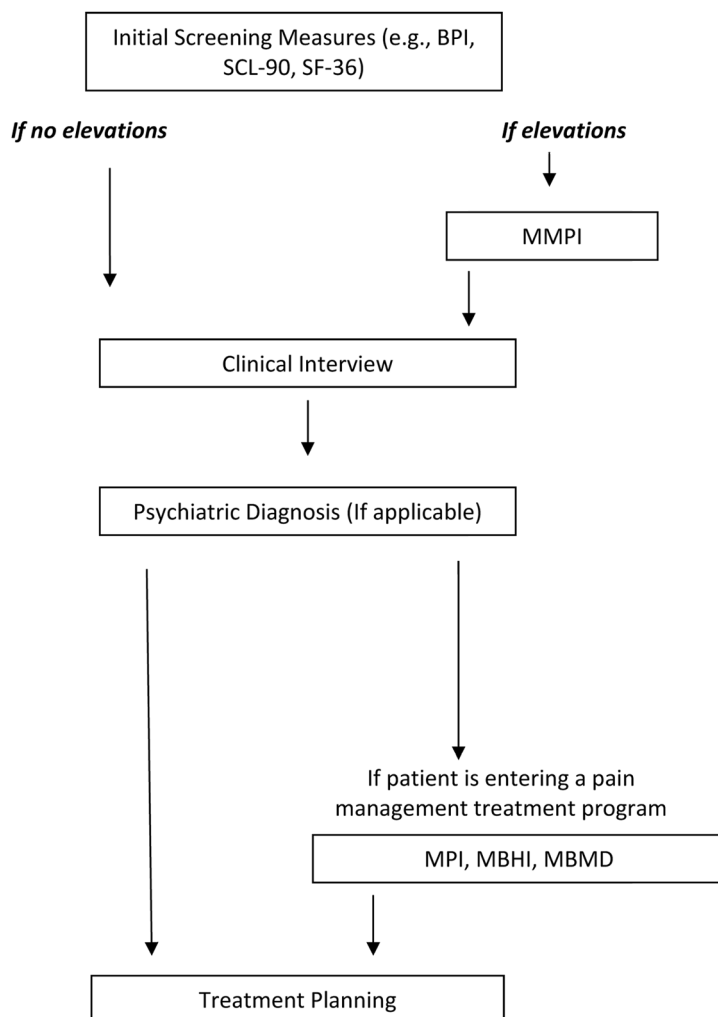


Figure 2. Stepwise approach.

Figure 2 begins with initial screening measures and, if elevations are present, more detailed personality assessment tools (e.g., MMPI) can be given. A clinical interview is then conducted in which the results of testing, including psychiatric diagnosis (if relevant), are discussed with the patient. If the patient decides to enter a cancer pain management program, further assessment can be given in order to examine the patient's fit (e.g., pain treatment compliance, communication style) in a pain management program. If the patient declines from taking part in a pain management program, the psychologist can present other options (e.g., individual therapy) for managing the psychosocial issues that can occur with a cancer diagnosis (e.g., depression, anxiety, social support). If chemotherapy is likely, a discussion of the potential deficits as well as assessment of cognitive functioning before, during, and after the chemo is also recommended (Reid-Arndt et al., 2009). Once a thoughtful pain assessment is conducted, this will provide important information for the psychologist when developing a pain management intervention strategy that is centered on the patient.

Psychological Interventions and Treatment Efficacy

Beyond conducting the comprehensive pain assessment described in the previous sections, psychologists have a critical role in carrying out the psychosocial component of the treatment plan. This section highlights psychological interventions that have promising empirical support.

Due to the growing understanding that psychosocial variables can significantly impact the perception of pain, treatment outcomes, and life expectancy there has been an increase in the use of psychological therapies over the last decade (Jacobsen, Møldrup, Christup, Sjøgren, & Hansen, 2010; O'Mahony, Goulet, & Payne, 2010; Stannard et al., 2010). Psychosocial variables that can impact the experience of pain include depression and anxiety symptoms, existential well-being, social support, spirituality, a desire for hastened death, and coping mechanisms (O'Mahony et al., 2010; Stannard et al., 2010; Strang, 1997). Therapies aimed at increasing or sustaining coping strategies and adherence to pharmacological and physiotherapies are essential to the management of pain. Although there are many psychological approaches used to treat pain conditions, cognitive behavioural therapy (CBT) has reported efficacy in appropriately managing cancer pain. A core principle of CBT is teaching patients cognitive and behavioural strategies to better manage their pain. Cognitive strategies include cognitive restructuring (e.g. reconceptualising the significance of pain), problem solving, and goal-setting. Relaxation techniques and behavioural activation are examples of behavioural strategies that help manage pain and increase quality of life.

Hypnosis and imagery are specific relaxation techniques used in CBT that have been efficacious in managing cancer pain. Hypnosis is the process of engaging in a state of focused relaxation and concentration while taking attention away from distress (Stannard et al., 2010). Imagery is described as a "less passive form of hypnosis" which moves the focus from the pain to the image of a peaceful place (Stannard et al., 2010, p. 338). Research has shown these relaxation techniques to be effective in treating acute cancer pain in children and adults (Stannard et al., 2010). As for chronic malignant cancer pain, the research is inconclusive but promising. For example, a study by Spiegel and Bloom (1983) examined the use of weekly group therapy (with and without hypnosis) for women with metastatic breast cancer (as cited in Stannard et al., 2010). The results showed that those who underwent hypnosis experienced less pain sensations and less suffering but did not differ in pain frequency or duration. Unfortunately, a limitation of the hypnosis and imagery research is that most of it was conducted prior to the 21st century (Stannard et al., 2010).

Comprehensive CBT, which employs multiple strategies for managing pain, is another evidenced-based psychological intervention used with cancer pain patients that has been successful in individual and group formats (Stannard et al., 2010). This intervention has also been effective in increasing caregiver self-efficacy in helping the patient manage pain. In addition to pain management, there is evidence that comprehensive CBT may impact the cancer process. For example, a small group using comprehensive CBT strategies reduced the risk of breast cancer recurrence by 45% as well as death from all causes including cancer (Andersen et al., 2008).

Brief CBT (e.g. a single one hour session) provides educational information to encourage patients to take on an active role in their care and has led to successful outcomes for cancer patients (Stannard et al., 2010). These interventions usually focus on a single CBT technique (e.g. cognitive restructuring) and are most effective when supplemented by educational information (e.g., booklet or a brief educational video; Lovell et al., 2010). Brief pain management consultations have been found to increase knowledge of pain management, decrease pain intensity and negative beliefs about pain medication, and demonstrate a reduction in pain catastrophizing (Lovell et al., 2010; Stannard et al., 2010).

Technology has also been used to teach cognitive behavioural strategies. A randomized control trial resulted in significantly reduced pain for patients who underwent biofeedback-assisted relaxation compared to patients who received conventional care (Tsai et al., 2007). In another study, giving patients an MP3 player loaded with cognitive behavioural interventions that they could use as needed reduced pain scores after two weeks but scores were not significantly different from baseline at the two week follow up (Kwekkeboom, Abbott-Anderson, & Wanta, 2010). The lack of sustained reduction in pain suggests that patients need to continue to employ cognitive behavioural strategies and take an active role in managing their pain.

In addition to the evidence-based psychological interventions discussed above, research supports the use of storytelling as a promising intervention for cancer pain patients. This approach has been used with American Indian and Alaska Native populations but can also be used with different patient populations when deemed clinically appropriate (Pelusi & Krebs, 2005). Storytelling can be defined as orally communicating stories of “health, healing, and survivorship” (Pelusi & Krebs, 2005, p. 12). Patients who engage in this process are able to share their experience, meanings, and interpretations of cancer pain while providing the clinician with key issues that can serve as discussion points (Meghani & Houldin, 2007; Pelusi & Krebs, 2005). This process empowers the patient while providing the listener with important information about the patient’s cancer experience. Authors also discussed the importance of self-awareness as a clinician to ensure that “culturally sensitive and responsive care” (Pelusi & Krebs, 2005, p. 16) is being applied to improve clinician trust and communication as well as to offer the most effective cancer pain management (Meghani & Houldin, 2007; Pelusi & Krebs, 2005).

Barriers to Cancer Pain Management

Although proper pain assessment and treatment approaches facilitate the pain management process, there are factors that can negatively influence adequate patient care including: fears of medication, communication difficulties with providers, the complexity of pain, and difficulties with biopsychosocial assessment (Hemming & Maher, 2005; Manzano, Ziegler, & Bennett, 2014; Potter, Wiseman, Dunn, & Boyle, 2003). Patients may refrain from properly using their medication due to misconceptions such as fears of addiction or side effects, especially those side effects that may interfere with cognitive functioning (Manzano et al., 2014; Potter et al., 2003). Communication difficulties with medical providers can also interfere with pain management. Some patients may refrain from reporting their pain to their medical provider due to their perception that they are ‘bothering’ the provider (Potter et al., 2003).

Patients may also be concerned that by bringing up their pain they are acknowledging the progression of their disease. Given these issues, psychologists have an important role in providing a safe place for patients to discuss their fears, as a patient advocate, and in empowering their patients to become their own advocates.

The complexity of pain also complicates its management (Hemming & Maher, 2005). For example, a cancer patient can experience neuropathic and bone pain simultaneously. Both of these pain syndromes are difficult to manage alone and may require different treatment approaches. Finding the most appropriate medication to treat both types of pain can become a tedious process for the patient and could possibly lead to more complications from the medications. Psychologists can provide crucial support and encouragement for patients to persevere throughout this often frustrating process.

Lastly, difficulties with the biopsychosocial assessment process can serve as a barrier. However, one of the most important processes in pain management is such an assessment (Hemming & Maher, 2005). This allows the pain experience to be understood through the perspective of the patient but can be difficult if the patient lacks the vocabulary to describe his or her pain. Table 1 contains terminology that the clinician can offer to the patient to facilitate an accurate understanding of the patient's pain experience as well as medication classes typically used to treat different types of pain (Hemming & Maher, 2005).

Table 1

Pain language and medications

Type of Pain	Descriptor	Medication(s)
Somatic	Aching, throbbing, gnawing, localized	Analgesics
Visceral	Deep aching, cramping, dull pressure poorly localized	Antispasmodics
Neuropathic	Burning, ice burn, shooting, pins and needles, tingling, sandpaper, pain on light touch (allodynia)	Tricyclics, Anticonvulsants
Bone	Constant, deep	Biphosphonates

Another useful tool to aid in overcoming difficulties with assessment and pain management is the “ABCDE” approach developed by Brant (2003; as cited in Hemming & Maher, 2005). The approach is described below:

- A: Ask and assess the patient's experience regularly;
- B: Believe the patient – they are the experts on themselves;
- C: Choose interventions that best suit the patient;
- D: Deliver treatment in an adequate time frame;
- E: Empower the patient in order to build self-efficacy.

This approach can also be incorporated into the stepwise approach for cancer pain assessment discussed previously in this paper.

Routine, ongoing patient education and assessment are encouraged to reduce barriers to treatment and improve treatment adherence (Syrjala et al., 2008; Yildirim, Cicek, & Uyar, 2009). The psychologist can play a powerful role in providing a thorough biopsychosocial assessment, reducing the patient's fears, encouraging communication between providers and patient, and providing ongoing psychosocial support for the patient.

Discussion

This review of the literature highlights the biopsychosocial nature of cancer pain and cancer pain management. The current state of knowledge demonstrates the importance of a multidisciplinary approach to cancer pain management. Psychologists working in this arena need to be aware of the role of each discipline in order to better understand how the psychosocial approach complements team-based care. As stated at the beginning of this paper, the role of cancer pain management has been reviewed from the viewpoint of social work (Glajchen, Blum, & Calder, 1995). To our knowledge, this is the first review that extracts and synthesizes key points from the vast oncology literature into a guide for psychologists to optimize their role in assessment and management of cancer pain.

Limitations and Future Directions in Research

As a review, literature synthesis has its limitations. For example, grey literature searching was limited in its scope through the use of specific data bases related to psychosocial literature (e.g., PsychInfo, Medline Plus). Because of this, it is possible that some relevant studies could have been missed in the search. Despite the limitations, this review offers researchers and clinicians knowledge of what issues may be more pertinent for psychologists.

With the recent mandate for cancer centres to conduct distress screenings, the assessment and management of cancer pain will continue to evolve. Future research could explore how this change impacts this evolution as well as the attitudes and knowledge of providers, including psychologists, involved in cancer pain management. In addition, research is needed to further understand the practices and experiences of psychologists who work with cancer patients in non-medical settings. A particular focus is needed on assessing ways to facilitate a multidisciplinary team approach when team members work in different facilities.

Clinical Implications

Each patient has a unique pain experience. It is important that psychologists take a multidimensional approach when assessing the pain experience. They should also have an understanding of the cancer pain process including the psychological, social, and the biological changes that occur. All three of these factors influence how pain is perceived and experienced. Due to the complex nature of pain, using a multidimensional and multidisciplinary approach is more likely to lead to positive treatment outcomes. With the new mandate for distress screenings in cancer centres in the United States starting in 2015, psychosocial care will become a standard for quality cancer care (Stringer, 2014). Psychologists will soon have an increased opportunity to engage in pain assessment techniques to facilitate appropriate pain management treatment planning as well as the selection of evidence-based psychological interventions that are well-suited for the patient. Given the importance of providing ongoing education regarding the multidimensional nature of the cancer pain process, psychologists who work with cancer patients should engage in advanced training in psycho-oncology and palliative care in order to stay up-to-date with the oncology literature. Professional organizations such as the American Psychosocial Oncology Society and the American Academy of Pain Management design resources and implement training opportunities for psychologists in the area of pain management. As knowledge and attitudes toward pain improve, so too will the services for patients experiencing cancer pain.

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References

- Aaronson, N. K., Ahmedzai, S., Bergman, B., Bullinger, M., Cull, A., Duez, N. J., . . . Takeda, F. (1993). The European Organization for Research and Treatment of Cancer QLQ-C30: A quality-of-life instrument for use in international clinical trials in oncology. *Journal of the National Cancer Institute*, 85(5), 365-376. doi:[10.1093/jnci/85.5.365](https://doi.org/10.1093/jnci/85.5.365)
- Ahmedzai, S. H., Nauck, F., Bar-Sela, G., Bosse, B., Leyendecker, P., & Hopp, M. (2012). A randomized, double-blind, active-controlled, double-dummy, parallel-group study to determine the safety and efficacy of oxycodone/naloxone prolonged-release tablets in patients with moderate/severe, chronic cancer pain. *Palliative Medicine*, 26(1), 50-60. doi:[10.1177/0269216311418869](https://doi.org/10.1177/0269216311418869)
- Andersen, B. L., Yang, H.-C., Farrar, W. B., Golden-Kreutz, D. M., Emery, C. F., Thornton, L. M., . . . Carson, W. E. (2008). Psychologic intervention improves survival for breast cancer patients. *Cancer*, 113, 3450-3458. doi:[10.1002/cncr.23969](https://doi.org/10.1002/cncr.23969)
- Anderson, K. O. (2011). Assessment of patients with cancer-related pain. In D. Turk & R. Melzack (Eds.), *Handbook of pain assessment* (3rd ed., pp. 376-395). New York, NY, USA: The Guilford Press.
- Auret, K., & Schug, S. A. (2013). Pain management for the cancer patient – Current practice and future developments. *Best Practice & Research: Clinical Anaesthesiology*, 27(4), 545-561. doi:[10.1016/j.bpa.2013.10.007](https://doi.org/10.1016/j.bpa.2013.10.007)
- Bruns, D., & Disorbio, J. M. (2003). *Battery for Health Improvement 2*. Minneapolis, MN, USA: Pearson.
- Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Minnesota Multiphasic Personality Inventory (MMPI-2): Manual for administration and scoring*. Minneapolis, MN, USA: University of Minnesota Press.
- Cella, D. F., Tulsky, D. S., Gray, G., Sarafian, B., Linn, E., Silberman, M., . . . Brannon, J. (1993). The Functional Assessment of Cancer Therapy Scale: Development and validation of the general measure. *Journal of Clinical Oncology*, 11(3), 570-579.
- Cleeland, C. S. (1989). Measurement of pain by subjective report. In C. R. Chapman & J. D. Loeser (Eds.), *Advances in Pain Research and Therapy: Vol. 12. Issues in pain measurement* (pp. 391-403). New York, NY, USA: Raven Press.
- Crichton, P., & Moorey, S. (2002). Treating pain in cancer patients. In D. Turk & R. Gatchel (Eds.), *Psychological approaches to pain management: A practitioner's handbook* (2nd ed., pp. 501-514). New York, NY, USA: The Guilford Press.
- Derogatis, L. R. (1994). *SCL-90-R: Symptom Checklist-90-R*. Minneapolis, MN, USA: NCS Pearson.
- Diamond, K. L. (2007). *Psychologists' attitudes and knowledge regarding pain* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database (UMI No. 3245897)

- Durand, J. P., & Goldwasser, F. (2002). Dramatic recovery of paclitaxel-disabling neurosensory toxicity following treatment with venlafaxine. *Anti-Cancer Drugs*, 13(7), 777-780. doi:[10.1097/00001813-200208000-00013](https://doi.org/10.1097/00001813-200208000-00013)
- Esin, E., & Yalcin, S. (2014). Neuropathic cancer pain: What we are dealing with? How to manage it? *OncoTargets and Therapy*, 7, 599-618. doi:[10.2147/OTT.S60995](https://doi.org/10.2147/OTT.S60995)
- Fallon, M., Hanks, G., & Cherny, N. (2006). Principles of control of cancer pain. *BMJ: British Medical Journal*, 332(7548), 1022-1024. doi:[10.1136/bmj.332.7548.1022](https://doi.org/10.1136/bmj.332.7548.1022)
- Fishman, B., Pasternak, S., Wallenstein, S. L., Houde, R. W., Holland, J. C., & Foley, K. M. (1987). The Memorial Pain Assessment Card: A valid instrument for the evaluation of cancer pain. *Cancer*, 60, 1151-1158. doi:[10.1002/1097-0142\(19870901\)60:5<1151::AID-CNCR2820600538>3.0.CO;2-G](https://doi.org/10.1002/1097-0142(19870901)60:5<1151::AID-CNCR2820600538>3.0.CO;2-G)
- Foley, K. M. (2004). Acute and chronic cancer pain syndromes. In D. Doyle, G. Hanks, N. I. Cherny, & K. Calman (Eds.), *Oxford textbook of palliative medicine* (3rd ed., pp. 298-316). Oxford, United Kingdom: Oxford University Press.
- Garcia, M. K., McQuade, J., Haddad, R., Patel, S., Lee, R., Yang, P., . . . Cohen, L. (2013). Systematic review of acupuncture in cancer care: A synthesis of the evidence. *Journal of Clinical Oncology*, 31(7), 952-960. doi:[10.1200/JCO.2012.43.5818](https://doi.org/10.1200/JCO.2012.43.5818)
- Gatchel, R. J. (2005). *Clinical essentials of pain management*. Washington, DC, USA: American Psychological Association.
- Gilron, I., Jensen, T. S., & Dickenson, A. H. (2013). Combination pharmacotherapy for management of chronic pain: From bench to bedside. *Lancet Neurology*, 12(11), 1084-1095. doi:[10.1016/S1474-4422\(13\)70193-5](https://doi.org/10.1016/S1474-4422(13)70193-5)
- Giordano, J., Abramson, K., & Boswell, M. V. (2010). Pain assessment: Subjectivity, objectivity, and the use of neurotechnology part one: Practical and ethical issues. *Pain Physician*, 13, 305-315.
- Glajchen, M., Blum, D., & Calder, K. (1995). Cancer pain management and the role of social work: Barriers and interventions. *Health & Social Work*, 20(3), 200-206.
- Hemming, L., & Maher, D. (2005). Cancer pain in palliative care: Why is management so difficult? *British Journal of Community Nursing*, 10(8), 362-367. doi:[10.12968/bjcn.2005.10.8.18574](https://doi.org/10.12968/bjcn.2005.10.8.18574)
- Hökkä, M., Kaakinen, P., & Pölkki, T. (2014). A systematic review: Non-pharmacological interventions in treating pain in patients with advanced cancer. *Journal of Advanced Nursing*, 70(9), 1954-1969. doi:[10.1111/jan.12424](https://doi.org/10.1111/jan.12424)
- Jacobsen, R., Møldrup, C., Christup, L., Sjøgren, P., & Hansen, O. B. (2010). Psychological and behavioural predictors of pain management outcomes in patients with cancer. *Scandinavian Journal of Caring Sciences*, 24, 781-790. doi:[10.1111/j.1471-6712.2010.00776.x](https://doi.org/10.1111/j.1471-6712.2010.00776.x)
- Jones, V. M., Moore, K. A., & Peterson, D. M. (2011). Capsaicin 8% topical patch (Qutenza) – A review of the evidence. *Journal of Pain & Palliative Care Pharmacotherapy*, 25(1), 32-41. doi:[10.3109/15360288.2010.547561](https://doi.org/10.3109/15360288.2010.547561)
- Kerns, R. D., Turk, D. C., & Rudy, T. E. (1985). The West Haven-Yale Multidimensional Pain Inventory (WHYMPI). *Pain*, 23, 345-356. doi:[10.1016/0304-3959\(85\)90004-1](https://doi.org/10.1016/0304-3959(85)90004-1)
- Kwekkeboom, K. L., Abbott-Anderson, K., & Wanta, B. (2010). Feasibility of a patient-controlled cognitive-behavioral intervention for pain, fatigue, and sleep disturbance in cancer. *Oncology Nursing Forum*, 37(3), E151-E159. doi:[10.1188/10.ONF.E151-E159](https://doi.org/10.1188/10.ONF.E151-E159)

- Linden, W., Vodermaier, A., MacKenzie, R., & Greig, D. (2012). Anxiety and depression after cancer diagnosis: Prevalence rates by cancer type, gender, and age. *Journal of Affective Disorders*, 141(2-3), 343-351. doi:[10.1016/j.jad.2012.03.025](https://doi.org/10.1016/j.jad.2012.03.025)
- Lovell, M. R., Forder, P. M., Stockler, M. R., Butow, P., Briganti, E. M., Chye, R., . . . Boyle, F. M. (2010). A randomized control trial of a standardized educational intervention for patients with cancer pain. *Journal of Pain and Symptom Management*, 40(1), 49-59. doi:[10.1016/j.jpainsymman.2009.12.013](https://doi.org/10.1016/j.jpainsymman.2009.12.013)
- Manzano, A., Ziegler, L., & Bennett, M. (2014). Exploring interference from analgesia in patients with cancer pain: A longitudinal qualitative study. *Journal of Clinical Nursing*, 23, 1877-1888. doi:[10.1111/jocn.12447](https://doi.org/10.1111/jocn.12447)
- Meghani, S. H., & Houldin, A. D. (2007). The meanings and attitudes about cancer pain among African Americans. *Oncology Nursing Forum*, 34(6), 1179-1186. doi:[10.1188/07.ONF.1179-1186](https://doi.org/10.1188/07.ONF.1179-1186)
- Melzack, R. (1987). The Short-Form McGill Pain Questionnaire. *Pain*, 30(2), 191-197. doi:[10.1016/0304-3959\(87\)91074-8](https://doi.org/10.1016/0304-3959(87)91074-8)
- Millon, T., Antoni, M., Millon, C., & Davis, R. (2003). *Millon Behavioral Diagnostic*. Minneapolis, MN, USA: National Computer Systems.
- Millon, T., Green, C. J., & Meagher, R. B. (1982). A new psychodiagnostic tool for clients in rehabilitation settings: The MBHI. *Rehabilitation Psychology*, 27(1), 23-35. doi:[10.1037/h0090959](https://doi.org/10.1037/h0090959)
- Minozzi, S., Amato, L., & Davoli, M. (2013). Development of dependence following treatment with opioid analgesics for pain relief: A systematic review. *Addiction*, 108(4), 688-698. doi:[10.1111/j.1360-0443.2012.04005.x](https://doi.org/10.1111/j.1360-0443.2012.04005.x)
- Müller-Schwefe, G., Ahlbeck, K., Aldington, D., Alon, E., Coaccioli, S., Coluzzi, F., . . . Sichère, P. (2014). Pain in the cancer patient: Different pain characteristics CHANGE pharmacological treatment requirements. *Current Medical Research and Opinion*, 30(9), 1895-1908. doi:[10.1185/03007995.2014.925439](https://doi.org/10.1185/03007995.2014.925439)
- Navarro, A., Saldaña, M. T., Pérez, C., Torrades, S., & Rejas, J. (2010). Patient-reported outcomes in subjects with neuropathic pain receiving pregabalin: Evidence from medical practice in primary care settings. *Pain Medicine*, 11(5), 719-731. doi:[10.1111/j.1526-4637.2010.00824.x](https://doi.org/10.1111/j.1526-4637.2010.00824.x)
- Neal, A. J., Qian, M. Y., Clinch, A. S., & Le, B. H. (2014). Orthostatic hypotension secondary to CRMP-5 paraneoplastic autonomic neuropathy. *Journal of Clinical Neuroscience*, 21(5), 885-886. doi:[10.1016/j.jocn.2013.07.035](https://doi.org/10.1016/j.jocn.2013.07.035)
- O'Mahony, S., Goulet, J. L., & Payne, R. (2010). Psychosocial distress in patients treated for cancer pain: A prospective observational study. *Journal of Opioid Management*, 6(3), 211-222. doi:[10.5055/jom.2010.0019](https://doi.org/10.5055/jom.2010.0019)
- Paice, J. A. (2006). Cancer pain. In J. Von Roenn, J. Paice, & M. Preodor (Eds.), *Current diagnosis & treatment of pain* (pp. 85-101). New York, NY, USA: Lange Medical Books/McGraw-Hill.
- Pelusi, J., & Krebs, L. U. (2005). Understanding cancer: Understanding stories of life and living. *Journal of Cancer Education*, 20(1), 12-16. doi:[10.1207/s15430154jce2001s_04](https://doi.org/10.1207/s15430154jce2001s_04)
- Peng, W. L., Wu, G. J., Sun, W. Z., Chen, J. C., & Huang, A. T. (2006). Multidisciplinary management of cancer pain: A longitudinal retrospective study on a cohort of end-stage cancer patients. *Journal of Pain and Symptom Management*, 32(5), 444-452. doi:[10.1016/j.jpainsymman.2006.05.017](https://doi.org/10.1016/j.jpainsymman.2006.05.017)
- Portenoy, R. K. (2011). Treatment of cancer pain. *Lancet*, 377, 2236-2247. doi:[10.1016/S0140-6736\(11\)60236-5](https://doi.org/10.1016/S0140-6736(11)60236-5)

- Potter, V. T., Wiseman, C. E., Dunn, S. M., & Boyle, F. M. (2003). Patient barriers to optimal pain control. *Psycho-Oncology*, 12, 153-160. doi:10.1002/pon.627
- Reid-Arndt, S. A., Yee, A., Perry, M. C., & Hsieh, C. (2009). Cognitive and psychological factors associated with early posttreatment functional outcomes in breast cancer survivors. *Journal of Psychosocial Oncology*, 27(4), 415-434. doi:10.1080/07347330903183117
- Ripamonti, C. I., Santini, D., Maranzano, E., Berti, M., & Roila, F. (2012). Management of cancer pain: ESMO Clinical Practice Guidelines. *Annals of Oncology*, 23(Suppl 7), vii139-vii154. doi:10.1093/annonc/mds233
- Satin, J. R., Linden, W., & Phillips, M. J. (2009). Depression as a predictor of disease progression and mortality in cancer patients. *Cancer*, 115, 5349-5361. doi:10.1002/cncr.24561
- Sindrup, S. H., Bach, F. W., Madsen, C., Gram, L. F., & Jensen, T. S. (2003). Venlafaxine versus imipramine in painful polyneuropathy: A randomized, controlled trial. *Neurology*, 60(8), 1284-1289. doi:10.1212/01.WNL.0000058749.49264.BD
- Stannard, C. F., Kalso, E., & Ballantyne, J. (Eds.). (2010). *Evidenced-based chronic pain management*. Chichester, United Kingdom: Wiley-Blackwell.
- Strang, P. (1997). Existential consequences of unrelieved cancer pain. *Palliative Medicine*, 11, 299-305. doi:10.1177/026921639701100406
- Stringer, H. (2014, November). Unlocking the emotions of cancer: A new mandate requires cancer centers to screen oncology patients for distress. *Monitor on Psychology*, 45(10), 34. Retrieved from <http://apa.org/monitor/2014/11/emotions-cancer.aspx>
- Swarm, R., Abernethy, A. P., Anghelescu, D. L., Benedetti, C., Blinderman, C. D., Boston, B., . . . Weinstein, S. M. (2010). Adult cancer pain. *Journal of the National Comprehensive Cancer Network*, 8(9), 1046-1086.
- Syrjala, K. L., Abrams, J. R., Polissar, N. L., Hansberry, J., Robison, J., DuPen, S., . . . DuPen, A. (2008). Patient training in cancer pain management using integrated print and video materials: A multisite randomized control trial. *Pain*, 135(1-2), 175-186. doi:10.1016/j.pain.2007.10.026
- Thinda, S. (2010). *Notes for a lecture on multidisciplinary treatment and the role of the psychologist*. Fridays at Forest Seminar, Springfield, MO, USA.
- Tsai, P.-S., Chen, P.-L., Lai, Y.-L., Lee, M.-B., & Lin, C.-C. (2007). Effects of electromyography biofeedback-assisted relaxation on pain in patients with advanced cancer in a palliative care unit. *Cancer Nursing*, 30(5), 347-353. doi:10.1097/01.NCC.0000290805.38335.7b
- Walker, J., Hansen, C. H., Martin, P., Symeonides, S., Ramessur, R., Murray, G., . . . Sharpe, M. (2014). Prevalence, associations, and adequacy of treatment of major depression in patients with cancer: A cross-sectional analysis of routinely collected clinical data. *The Lancet Psychiatry*, 1(5), 343-350. doi:10.1016/S2215-0366(14)70313-X
- Ware, J. E., & Sherbourne, C. D. (1992). The MOS 36-Item Short-Form Health Survey (SF-36): I. Conceptual framework and item selection. *Medical Care*, 30(6), 473-483. doi:10.1097/00005650-199206000-00002
- Weis, J., Bartsch, H.-H., Nagel, G. A., & Unger, C. (1996). Psychosocial care for cancer patients: A new holistic psychosomatic approach in acute care and rehabilitation. *Psycho-Oncology*, 5(1), 51-54. doi:10.1002/(SICI)1099-1611(199603)5:1<51::AID-PON205>3.0.CO;2-N

- Yildirim, Y. K., Cicek, F., & Uyar, M. (2009). Effects of pain education program on pain intensity, pain treatment satisfaction, and barriers in Turkish cancer patients. *Pain Management Nursing*, 10(4), 220-228. doi:[10.1016/j.pmn.2007.09.004](https://doi.org/10.1016/j.pmn.2007.09.004)
- Zeppetella, G., Davies, A., Eijgelshoven, I., & Jansen, J. P. (2014). A network meta-analysis of the efficacy of opioid analgesics for the management of breakthrough cancer pain episodes. *Journal of Pain and Symptom Management*, 47(4), 772-785.e5. doi:[10.1016/j.jpainsymman.2013.05.020](https://doi.org/10.1016/j.jpainsymman.2013.05.020)