

Psychological Distress and Pain in Cancer: Impacts and Interventions

Charlize C. Mackie

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Abstract

Research shows that depression, anxiety, and stress significantly contribute to cancer-related pain.

Cognitive-behaviour theory suggests that negative thought patterns such as catastrophizing increases pain perception, while social desirability bias imposes barriers on patients' likelihoods to express their pain.

This article explores the impact of psychological distress on cancer patients and examines effective interventions. Over half the patients undergoing cancer treatment experience psychological distress. A 12-month longitudinal analysis demonstrated that addressing psychological factors reduced psychological distress and, in turn, lowered cancer-related pain. Intervention methods such as hypnosis and relaxation with imagery show large effect sizes, suggesting that incorporating these treatments alongside cancer therapies may enhance patients' psychological wellbeing.

Key words: *psychological distress, cancer-related pain*

Psychological Distress and Pain in Cancer: Impacts and Interventions

Psychological distress influences both the experience of pain and responsiveness to interventions for patients with cancer (Syrjala et al., 2014). Psychological distress refers to stress, anxiety, and depression (Viertiö et al., 2021). Cancer related pain affects approximately 44.5% of patients from diagnosis through to survivorship or the end of life (Snijders et al., 2023). Since the early 2000's a correlation has occurred between psychological distress and increased pain (Janz et al., 2011; Rief et al., 2011; Syrjala et al., 2014; Trancas et al., 2010). Cognitive-behavioural theory suggests that the persons way of thinking (e.g., 'this pain will never end') increases pain perception (González-Prendes & Resko, 2012), while cognitive biases such as social desirability bias, impose barriers on cancer patients by reducing their likelihood to communicate their pain from fear of it meaning "*disease progression or recurrence*" (Ganeshpurkar et al., 2018). Cognitive distortions, defined as believing someone is thinking something that is inaccurate, were also reasons why patients chose not to voice their pain (Rnic et al., 2016; Syrjala et al., 2014). This article aims to explore psychological distress and interventions to address psychological distress for cancer patients.

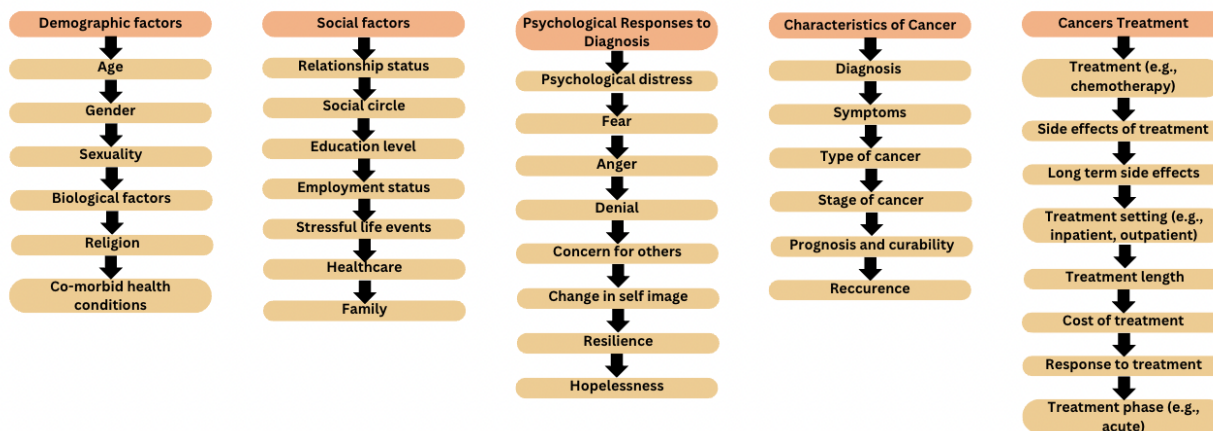
Psychological Distress and Cancer

Clinical depression, cancer-related (emotional) distress, fatigue, and pain, are significantly prevalent among those with active cancer (Bortolon et al., 2014; Syrjala et al., 2014). Clinical depression, also known as major depressive disorder, is associated with increased pain and other symptoms such as decreased adherence to treatment, a heightened desire to die, and a poorer quality of life (Trancas et al., 2010). Wang et al.'s (2012) 12-month longitudinal analysis found targeting depression in cancer patients significantly reduced pain when compared to targeting pain to reduce depression. Arora et al.'s (2019) cross-sectional analysis on 393 cancer inpatients found, significantly, for those that had depression 44.9% had anxiety. Niedzwiedz et al. (2019) performed a systematic review from 2012 to 2019 and found depression and anxiety, for those with cancer, often occurred from demographic and social factors, psychological responses to diagnosis, characteristics of cancer, and their cancers treatment (see Figure 1).

These results indicate that psychological factors significantly contribute to cancer-related pain, hence the need for successful psychological interventions.

Figure 1

Factors that may contribute to psychological distress during cancer treatment



Psychological Interventions to Address Psychological Distress

Several studies demonstrate that treating psychological distress reduces cancer-related pain, with hypnosis, relaxation with imagery, cognitive behavioural therapy, and education methods, as effective interventions (see Table 1; Johannsen et al., 2013; Kwekkeboom et al., 2010; Montgomery et al., 2013; Tatrow & Montgomery, 2006). A systematic review and meta-analysis found anxiety and cancer related pain significantly decreased when exposed to hypnosis for 1,182 adults ($n = 968$ women; Sine et al. 2022), while Choobi Anzali et al. (2022) found hypnotherapy successfully reduced pain for children with cancer. Hypnosis refers to a detached state of consciousness that is susceptible to suggestion, where during the symptom-specific suggestion phase hypnotist will suggest (for example) for pain to reduce (Montgomery et al., 2013; Williamson, 2019). As for relaxation with imagery, the process of visualising a favoured peaceful setting such as a beach, reported significant differences in psychological distress when compared to the control group ($n = 50$ treatment group; $n = 54$ control group) (De Paolis et al., 2019). Cognitive behavioural therapy, a talk therapy that seeks to change negative thought processes, has been evidenced to improve psychological wellbeing for cancer survivors (Blumenstein et al., 2022; Lin et al.,

2022) and chemotherapy treatments for those with breast cancer (Wang et al., 2023). These findings show promise towards incorporating these complimentary therapies alongside cancer interventions many use today, as patients' cancer related pain may significantly improve from their psychological distress being targeted.

Table 1

Psychological interventions for reducing cancer pain during treatment

Treatment	Key Findings	Study Design(s)	Effect	Reference(s)
Hypnosis	Moderate to large effect sizes when used to improve pain and psychological distress. Significantly large effect for improving pace of recovery. Pediatric patients had reduced anticipatory anxiety, procedure related pain, procedure related anxiety, and behavioural distress.	Literature reviews Cross sectional analyses	Strong	(Choobi Anzali et al., 2022; Montgomery et al., 2013; O'Connor et al., 2012; Sine et al., 2022; Syrjala et al., 1992, 2014).
Relaxation with imagery	Limited to breast cancer treatments relaxation with imagery reduces cancer-related pain	Systematic review	Strong	(De Paolis et al., 2019; Johannsen et al., 2013).
Mindfulness-based meditations	Some support for improvements in sleep and psychological distress yet not enough research		Small	(Kwekkeboom et al., 2010).
Cognitive behavioural therapy	Women with breast cancer had improvements to their psychological distress and pain following CBT.	Meta analysis	Moderate to strong	(Blumenstein et al., 2022; Lin et al., 2022; Tatrow & Montgomery, 2006; M. Wang et al., 2023).
Education method	Education methods increase self-efficacy and/or a cancer patients' confidence in managing their own pain and psychological distress. Small to moderate effect sizes were found.	Meta analyses	Small to moderate	(Bennett et al., 2009; Marie et al., 2013; Sheinfeld Gorin et al., 2012).

Conclusion

Psychological distress is a significant contributor to the cancer related pain cancer patients experience. Intervention methods such as hypnosis are successful in reducing psychological distress and,

in turn, cancer-related pain. This provides evidence towards using non-invasive therapies alongside cancer treatments today, as it shows promise towards enhancing cancer patients' psychological wellbeing.

References

- Arora, A., Saini, S. K., Nautiyal, V., Verma, S., Gupta, M., Kalra, B., & Ahmad, M. (2019). Cancer pain, anxiety, and depression in admitted patients at a tertiary care hospital: A prospective observational study. *Indian Journal of Palliative Care*, *25*(4), 562–566.
https://doi.org/10.4103/IJPC.IJPC_4_19
- Bennett, M. I., Bagnall, A.-M., & Closs, J. S. (2009). How effective are patient-based educational interventions in the management of cancer pain? Systematic review and meta-analysis. *Pain*, *143*(3), 192–199. <https://doi.org/10.1016/j.pain.2009.01.016>
- Blumenstein, K. G., Brose, A., Kemp, C., Meister, D., Walling, E., DuVall, A. S., & Zhang, A. (2022). Effectiveness of cognitive behavioral therapy in improving functional health in cancer survivors: A systematic review and meta-analysis. *Critical Reviews in Oncology/Hematology*, *175*, 103709.
<https://doi.org/10.1016/j.critrevonc.2022.103709>
- Bortolon, C., Krikorian, A., Carayol, M., Brouillet, D., Romieu, G., & Ninot, G. (2014). Cancer-related fatigue in breast cancer patients after surgery: A multicomponent model using partial least squares—path modeling. *Psycho-Oncology*, *23*(4), 444–451. <https://doi.org/10.1002/pon.3438>
- Choobi Anzali, B., Mohammadi, S., Malkari, B., Goli, R., Norouzrajab, S., & Talebiazar, N. (2022). Hypnotherapy in management of pain in children with cancer: A case report. *IJS Global Health*, *5*(5), e82. <https://doi.org/10.1097/GH9.0000000000000082>
- De Paolis, G., Naccarato, A., Cibelli, F., D'Alete, A., Mastroianni, C., Surdo, L., Casale, G., & Magnani, C. (2019). The effectiveness of progressive muscle relaxation and interactive guided imagery as a pain-reducing intervention in advanced cancer patients: A multicentre randomised controlled non-pharmacological trial. *Complementary Therapies in Clinical Practice*, *34*, 280–287.
<https://doi.org/10.1016/j.ctcp.2018.12.014>
- Ganeshpurkar, A., Maheshwari, R., Tekade, M., & Tekade, R. K. (2018). Chapter 7—concepts of hypothesis testing and types of errors. In R. K. Tekade (Ed.), *Dosage Form Design Parameters* (pp. 257–280). Academic Press. <https://doi.org/10.1016/B978-0-12-814421-3.00007-5>

- González-Prendes, A. A., & Resko, S. M. (2012). Cognitive- behavioral theory. *Research Gate*.
<https://doi.org/10.4135/9781452230597.n2>
- Janz, N. K., Hawley, S. T., Mujahid, M. S., Griggs, J. J., Alderman, A., Hamilton, A. S., Graff, J. J., Jagsi, R., & Katz, S. J. (2011). Correlates of worry about recurrence in a multiethnic population-based sample of women with breast cancer. *Cancer*, *117*(9), 1827–1836.
<https://doi.org/10.1002/cncr.25740>
- Johannsen, M., Farver, I., Beck, N., & Zachariae, R. (2013). The efficacy of psychosocial intervention for pain in breast cancer patients and survivors: A systematic review and meta-analysis. *Breast Cancer Research and Treatment*, *138*(3), 675–690. <https://doi.org/10.1007/s10549-013-2503-4>
- King, K. (2010). A Review of the Effects of Guided Imagery on Cancer Patients with Pain. *Complementary Health Practice Review*, *15*, 98–107. <https://doi.org/10.1177/1533210110388113>
- Kwekkeboom, K. L., Cherwin, C. H., Lee, J. W., & Wanta, B. (2010). Mind-body treatments for the pain-fatigue-sleep disturbance symptom cluster in persons with cancer. *Journal of Pain and Symptom Management*, *39*(1), 126–138. <https://doi.org/10.1016/j.jpainsymman.2009.05.022>
- Lin, C., Tian, H., Chen, L., Yang, Q., Wu, J., Ji, Z., Zheng, D., Li, Z., & Xie, Y. (2022). The efficacy of cognitive behavioral therapy for cancer: A scientometric analysis. *Frontiers in Psychiatry*, *13*.
<https://doi.org/10.3389/fpsy.2022.1030630>
- Marie, N., Luckett, T., Davidson, P. M., Lovell, M., & Lal, S. (2013). Optimal patient education for cancer pain: A systematic review and theory-based meta-analysis. *Supportive Care in Cancer: Official Journal of the Multinational Association of Supportive Care in Cancer*, *21*(12), 3529–3537. <https://doi.org/10.1007/s00520-013-1995-0>
- Montgomery, G. H., Schnur, J. B., & Kravits, K. (2013). Hypnosis for cancer care: Over 200 years young. *CA: A Cancer Journal for Clinicians*, *63*(1), 31–44. <https://doi.org/10.3322/caac.21165>
- Niedzwiedz, C. L., Knifton, L., Robb, K. A., Katikireddi, S. V., & Smith, D. J. (2019). Depression and anxiety among people living with and beyond cancer: A growing clinical and research priority. *BMC Cancer*, *19*(1), 943. <https://doi.org/10.1186/s12885-019-6181-4>

- O'Connor, M., Weir, J., Butcher, I., Kleiboer, A., Murray, G., Sharma, N., Thekkumpurath, P., Walker, J., Fallon, M., Storey, D. J., & Sharpe, M. (2012). Pain in patients attending a specialist cancer service: Prevalence and association with emotional distress. *Journal of Pain and Symptom Management, 43*(1), 29–38. <https://doi.org/10.1016/j.jpainsymman.2011.03.010>
- Rief, W., Bardwell, W. A., Dimsdale, J. E., Natarajan, L., Flatt, S. W., & Pierce, J. P. (2011). Long-term course of pain in breast cancer survivors: A 4-year longitudinal study. *Breast Cancer Research and Treatment, 130*(2), 579–586. <https://doi.org/10.1007/s10549-011-1614-z>
- Rnic, K., Dozois, D. J. A., & Martin, R. A. (2016). Cognitive distortions, humor styles, and depression. *Europe's Journal of Psychology, 12*(3), 348–362. <https://doi.org/10.5964/ejop.v12i3.1118>
- Sheinfeld Gorin, S., Krebs, P., Badr, H., Janke, E. A., Jim, H. S. L., Spring, B., Mohr, D. C., Berendsen, M. A., & Jacobsen, P. B. (2012). Meta-analysis of psychosocial interventions to reduce pain in patients with cancer. *Journal of Clinical Oncology: Official Journal of the American Society of Clinical Oncology, 30*(5), 539–547. <https://doi.org/10.1200/JCO.2011.37.0437>
- Sine, H., Achbani, A., & Filali, K. (2022). The Effect of Hypnosis on the Intensity of Pain and Anxiety in Cancer Patients: A Systematic Review of Controlled Experimental Trials. *Cancer Investigation, 40*(3), 235–253. <https://doi.org/10.1080/07357907.2021.1998520>
- Snijders, R. A. H., Brom, L., Theunissen, M., & van den Beuken-van Everdingen, M. H. J. (2023). Update on prevalence of pain in patients with cancer 2022: A systematic literature review and meta-Analysis. *Cancers, 15*(3), 591. <https://doi.org/10.3390/cancers15030591>
- Syrjala, K. L., Cummings, C., & Donaldson, G. W. (1992). Hypnosis or cognitive behavioral training for the reduction of pain and nausea during cancer treatment: A controlled clinical trial. *Pain, 48*(2), 137–146. [https://doi.org/10.1016/0304-3959\(92\)90049-H](https://doi.org/10.1016/0304-3959(92)90049-H)
- Syrjala, K. L., Jensen, M. P., Mendoza, M. E., Yi, J. C., Fisher, H. M., & Keefe, F. J. (2014). Psychological and behavioral approaches to cancer pain management. *Journal of Clinical Oncology, 32*(16), 1703–1711. <https://doi.org/10.1200/JCO.2013.54.4825>

- Tatrow, K., & Montgomery, G. H. (2006). Cognitive behavioral therapy techniques for distress and pain in breast cancer patients: A meta-analysis. *Journal of Behavioral Medicine, 29*(1), 17–27.
<https://doi.org/10.1007/s10865-005-9036-1>
- Trancas, B., Cardoso, G., Luengo, A., Vieira, C., & Reis, D. (2010). Depression in cancer patients: Diagnostic and therapeutic considerations. *Acta Medica Portuguesa, 23*(6), 1101–1112.
- Viertiö, S., Kiviruusu, O., Piirtola, M., Kaprio, J., Korhonen, T., Marttunen, M., & Suvisaari, J. (2021). Factors contributing to psychological distress in the working population, with a special reference to gender difference. *BMC Public Health, 21*(1), 611. <https://doi.org/10.1186/s12889-021-10560-y>
- Wang, H.-L., Kroenke, K., Wu, J., Tu, W., Theobald, D., & Rawl, S. M. (2012). Predictors of cancer-related pain improvement over time. *Psychosomatic Medicine, 74*(6), 642–647.
<https://doi.org/10.1097/PSY.0b013e3182590904>
- Wang, M., Xu, Y., Shi, J., Zhuang, C., Zhuang, Y., Li, J., & Cashin, P. H. (2023). The effect of cognitive behavioral therapy on chemotherapy-induced side effects and immune function in colorectal cancer patients undergoing chemotherapy: Study protocol for a randomized controlled trial. *Journal of Gastrointestinal Oncology, 14*(4), 1869–1877. <https://doi.org/10.21037/jgo-23-625>
- Williamson, A. (2019). What is hypnosis and how might it work? *Palliative Care, 12*, 1178224219826581. <https://doi.org/10.1177/1178224219826581>