Advances in Non-pharmacological Interventions for Cancer-Related Fatigue in Cancer Patients: A Postprint

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Abstract

Cancer-related fatigue (CRF) is characterized by subjectivity and persistence, and proper assessment, treatment, and care are gradually being recognized as an important aspect of follow-up cancer care. This article reviews the concept of CRF and the research progress on non-pharmacological interventions, aiming to provide a reference for the clinical implementation of non-pharmacological treatments for patients with CRF.

Full Text

Preamble

Progress in Research on Non-Drug Interventions for Cancer-Related Fatigue

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Abstract

Due to the subjective and persistent nature of cancer-related fatigue (CRF), the correct assessment, treatment, and care of CRF symptoms in cancer patients has gradually been recognized as an important aspect of cancer follow-up treatment.

This article reviews the concept of CRF and the research progress of non-drug interventions, aiming to provide a reference for clinical implementation of non-drug therapies for CRF patients.

Keywords: fatigue; cancer-related fatigue; non-drug therapy; psychological intervention; Traditional Chinese Medicine; nutrition support; phototherapy

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Cancer is currently a malignant tumor that seriously threatens human health. Throughout the disease's onset, progression, treatment, and prognosis, patients experience subjective sensations including weakness, difficulty concentrating, loss of interest, and activity intolerance related to cancer or its treatment. The National Comprehensive Cancer Network (NCCN) guidelines list fatigue as a vital sign for cancer patients. Cancer-related fatigue is one of the most common clinical symptoms among oncology patients. Its main clinical manifestations include fatigue, weakness, depressed mood, and inability to concentrate. The etiology remains unclear, and there is a lack of unified standards for diagnosis and treatment. With advances in cancer treatment, CRF has gradually gained widespread clinical attention, with new attempts and explorations in its treatment and nursing care continuously emerging. Non-drug treatments for CRF are economical, practical, convenient, and effective, making them an important component of CRF management. This article comprehensively reviews the concept of CRF and the progress in non-drug interventions, further exploring the effectiveness and feasibility of non-drug treatments for CRF to broaden ideas for clinical intervention and nursing care.

1. The Concept of CRF

The NCCN guidelines define CRF as: a distressing, persistent, subjective sense of physical, emotional, or cognitive tiredness or exhaustion related to cancer or cancer treatment that interferes with daily functioning. The International Classification of Diseases (ICD) defines CRF as non-specific weakness, fatigue, debility, somnolence, and systemic decline. Its diagnostic criteria include: inability to concentrate; reduced passion, interest, and depressed mood; generalized weakness and heavy limbs; insomnia or hypersomnia; persistent fatigue after sleep; limited or difficult daily activities; significant emotional reactions; inability to perform previously manageable activities; prolonged symptom duration; and short-term memory decline.

2. Non-Drug Interventions for CRF

The NCCN guidelines for cancer-related fatigue indicate that treatment measures are divided into pharmacological and non-pharmacological approaches. Non-drug treatments for CRF during anti-tumor therapy include psychosocial interventions, Traditional Chinese Medicine (TCM) therapies, exercise therapy, nutritional counseling, and bright white light therapy (BWLT). With medical

progress and clinical exploration, non-drug treatments and nursing care for CRF have been enriched and expanded.

2.1 Psychosocial Interventions

With the influence of multidisciplinary integration, psychological, psychiatric, and behavioral analysis methods have been widely applied in clinical practice. Influenced by cancer disease factors, treatment effects, and prognosis, CRF may persist for extended periods and affect not only patients but also their families and work, reducing quality of life and social functioning. Psychosocial intervention is a proven effective non-drug measure for relieving CRF and is one of the most commonly used methods in clinical practice. Interventions encompass multiple aspects including the patient, family, living and working environment, medical staff, and society.

Psychosocial interventions target patients through cognitive improvement, negative emotion discharge, and mindfulness interventions to achieve therapeutic goals. Current measures and methods for psychosocial intervention are numerous but have not formed systematic or standardized protocols. There is a lack of research on whether more targeted and differentiated interventions should be implemented for patients with different stages or severity levels of CRF, representing a potential area for further investigation.

Cognitive Improvement: Providing education about cancer through health lectures and interviews helps patients and families understand the disease. Research shows that cognitive-behavioral comprehensive intervention can alleviate negative emotions in cancer patients, improve stress coping abilities, and establish social and family support by encouraging family members to provide emotional and psychological support, thereby maintaining patients' social roles.

Negative Emotion Discharge and Positive Energy Infusion: Studies have demonstrated that negative emotions in gynecological malignant tumor patients are positively correlated with CRF scores. Nursing staff guiding patients to discharge negative emotions through venting and communication can alleviate CRF.

Mindfulness Intervention: Multiple studies have shown that mindfulness intervention effectively relieves CRF in different cancer patients. Meditation, as part of mindfulness, achieves enlightenment through self-experience and has demonstrated effects in relieving anxiety, nausea, vomiting, dyspnea, fatigue, pain, and sleep disorders in cancer patients. Mindfulness-based stress reduction, music therapy, progressive relaxation training, and guided imagery therapy can guide patients toward positive self-experience.

2.2 Traditional Chinese Medicine Interventions

According to CRF's pathogenesis and clinical manifestations, it can be classified under TCM categories of "consumptive disease," "blood deficiency," and

"depression syndrome." Common TCM treatments for CRF include traditional Daoyin exercises, moxibustion, massage and tuina, auricular point pressing, herbal foot baths, and five-element music therapy. TCM treatment has always been a distinctive part of domestic medicine, and CRF patients' clinical symptoms can still be intervened with TCM non-drug treatments. Although the mechanisms and effects of TCM require further verification, it remains a direction for future exploration.

Research indicates that moxibustion can significantly reduce CRF in gastrointestinal tumor patients. Studies have shown that moxibustion can alleviate CRF in gastric cancer patients, and that moxibustion combined with herbal foot baths can relieve CRF in gastrointestinal tumor patients. Additional research demonstrates that auricular point pressing also has certain effects in relieving CRF in tumor patients.

2.3 Exercise Therapy

Exercise therapy affects patients' physical and psychological states, enabling them to reduce physical discomfort and improve activity capacity while obtaining spiritual and psychological satisfaction and pleasure during movement. This helps alleviate anxiety, tension, depression, and other emotions while enriching social roles. Currently, there is a lack of guideline-based or standardized unified standards regarding the types, intensity, and volume of exercise interventions. Additionally, patients may experience injuries due to poor disease understanding or unreasonable self-assessment of physical condition. Therefore, professional guidance and timely targeted adjustments based on patients' own conditions are needed to achieve intervention and protection goals.

Research shows that the effectiveness of exercise therapy from highest to lowest is: combined resistance and aerobic exercise, yoga, qigong, resistance exercise, muscle training, aerobic exercise, and tai chi. Studies on breast cancer rats suggest that moderate-intensity combined resistance and aerobic exercise can significantly improve CRF, possibly by regulating mitochondrial dynamics and improving mitochondrial function in skeletal muscle. Existing research demonstrates that exercise training has positive effects on CRF in patients with breast cancer, liver cancer, nasopharyngeal carcinoma, lung cancer, and esophageal cancer. Yoga has been shown to significantly reduce the severity of CRF in cancer patients, improve overall sleep quality, and enhance quality of life.

2.4 Nutritional Support

Active nutritional support can improve CRF, but current standards are lacking regarding supplement types, properties, total amounts, and nutritional requirements. Research has proposed that whether anti-inflammatory and antioxidant foods or nutritional supplements can relieve CRF requires further study. During nutritional counseling, clinicians must consider not only the patient's disease and physical condition but also dietary nutrition content, combining patient

physical and family conditions to provide targeted, detailed recommendations.

Studies have shown that patients' nutritional status is related to CRF, with indicators such as body weight and hemoglobin levels correlating with CRF. Higher dietary quality is associated with lower fatigue levels. Research demonstrates that refined nutritional management can significantly improve patients' nutritional status and CRF severity.

2.5 Light Therapy

Light therapy utilizes artificial or natural light to treat diseases. Multicenter randomized controlled trials on non-Hodgkin lymphoma survivors and cancer patients undergoing chemotherapy have shown that light therapy can relieve CRF. One trial indicated that among cancer survivors exposed to bright white light (BWL), CRF was significantly reduced compared to dim red light (DRL) controls. However, due to limitations such as incomplete equipment and professional training, light therapy research remains in its early stages, lacking large-scale data. Further research is needed on its efficacy in relieving CRF in tumor patients.

3. Conclusion

In addition to pain, nausea, and vomiting, fatigue is a major factor affecting cancer patients' daily lives. Attention to CRF is a key step in cancer disease management. Early detection, diagnosis, and treatment are important strategies for disease control. Non-drug treatments have positive effects in relieving anxiety and depression in CRF patients with high safety profiles and can be considered as effective disease management tools, either alone or in combination, to improve treatment outcomes, patient prognosis, and quality of life while reducing adverse event rates and enhancing nursing satisfaction.

References

[1] LAWRIE S M, MANDERSD N, GEDDESJ R, et al. A population-based incidence study of chronic fatigue[J]. Psychol Med, 1997.

[2] XIE X D, ZHANG X Y. Latest progress in cancer-related fatigue: interpretation of National Comprehensive Cancer Network guidelines for cancer-related fatigue version 2018[J]. Chin J Clin Oncol, 2018.

[3] PORTENOY R K, ITRI L M. Cancer-related fatigue: guidelines for evaluation and management[J]. Oncologist, 1999.

[4] DIAN L P, WEI X Q, TANG F, et al. Cognitive behavioral therapy for cancer patients with cancer-related fatigue: a Meta-analysis[J]. Chongqing Med, 2020.

[5] BI X L, SHI M H, CHI Y C. The intervention effect of cognitive behavior modification on cancer-related fatigue in patients with cancer[J]. China Med Her, 2020.

[6] CHEN T Y, YAN X N, XU X Y. The effect of cognitive behavioral therapy on cancer related fatigue symptoms in cancer patients: a Meta-analysis[J]. Nurs Integr Tradit Chin West Med, 2020.

[7] ZHU H W, LI F, LI Q H. Relationship between resilience and cancer-related fatigue among patients with gynecology malignant tumor: mediating effect of positive and negative affect[J]. Chin J Clin Psychol, 2020.

[8] LIN C, HU Y. Cancer-related fatigue: a conceptual analysis[J]. Nurs Foreign Med Sci, 2005.

[9] WANG J M, MEI H Y, SUN Y L. Effects of mindfulness and relaxation training on the fear of cancer recurrence, cancer-related fatigue and sleep quality in breast cancer patients[J]. Chin J Clin Oncol Rehabil, 2020.

[10] LIN L Z, DENG Y P, LIAN J P, et al. Influence of mindfulness decompression method on cancer-related fatigue and sleep quality in patients undergoing laryngeal cancer chemotherapy[J]. Nurs Pract Res, 2019.

[11] XU C Y, LU J H, WANG H Y. Effects of mindfulness relaxation training on cancer-related fatigue after transarterial chemoembolization in patients with liver cancer[J]. Oncol Prog, 2020.

[12] ZHANG T, CHENG F, CHENG X L, et al. Research progress on the application of meditation techniques in symptom management of cancer patients[J]. Chin Gen Pract Nurs, 2020.

[13] YANG X L, ZHANG R, ZHOU Y A. Effect of mindfulness meditation training on negative emotion of outpatient cancer patients[J]. Chin J Behav Med Brain Sci, 2015.

[14] FEI J. Clinical effect of moxibustion on patients with gastrointestinal cancer with cancer-induced fatigue[J]. China & Foreign Med Treat, 2020.

[15] JI Y X, SUN B, SHI S, et al. Clinical observation of efficacy of press needle combined with moxibustion in treatment of gastric cancer on cancer-related fatigue[J]. World J Integr Tradit West Med, 2020.

[16] TANG M F, LU Y. Effect of moxibustion combined with foot-bath on cancer-related fatigue of patients undergoing chemotherapy for gastrointestinal cancer[J]. Nurs Integr Tradit Chin West Med, 2020.

[17] ZHANG Y, QIAN H Y, TIAN L, et al. Effect of auricular point sticking on cancer-related fatigue in chemotherapy patients[J]. Chin J Gerontol, 2018.

[18] MEN H L, GUO Q Q, LI P Y, et al. Application status and prospect of traditional Chinese medicine nursing technology in cancer related fatigue nursing[J]. Chin Nurs Res, 2020.

[19] ZHANG Y H, LIN L Z. Cluster analysis of traditional Chinese medical syndrome types in cancer patients with cancer-related fatigue[J]. J Guangzhou Univ Tradit Chin Med, 2015.

[20] TAN X H, CUI Y, MEI H, et al. Progress in the application of traditional Chinese medicine nursing technology in cancer-related fatigue patients[J]. J Nurses Train, 2020.

[21] HE Y Y, XU J J. Effects of aerobic exercise on the function and dynamics of mitochondrial in rats' skeletal muscle after breast cancer-related fatigue[J]. Chin J Rehabil Med, 2020.

[22] YUAN T H, FAN W W, HU G L. Effects of relaxation training combined with aerobic exercise on psychological adjustment, cancer-related fatigue and sleep quality in patients with breast cancer[J]. Guangdong Med J, 2020.

[23] LIN P J, KLECKNER I R, LOH K P, et al. Influence of yoga on cancer-related fatigue and on mediational relationships between changes in sleep and cancer-related fatigue: a nationwide, multicenter randomized controlled trial of yoga in cancer survivors[J]. Integr Cancer Ther, 2019.

[24] CHANG Y L, WANG S. Effects of nurse-led exercise and cognitive behavioral intervention on reducing cancer-related fatigue in patients with medium-advanced hepatocellular carcinoma[J]. Chin J Pract Nurs, 2020.

[25] WANG Q S, WEI Q F, ZHONG Q L, et al. Application of multiple-modality exercise combined with music imaging in nasopharyngeal carcinoma patients with radiotherapy and chemotherapy[J]. Chin J Nurs, 2020.

[26] WANG Q. Effect of exercise-education intervention on cancer-related fatigue and quality of life in lung cancer chemotherapy patients[D]. Huzhou: Huzhou University, 2020.

[27] LIU L, WANG S Y, LI Y Y, et al. Effect of exercise intervention on negative emotion, cancer-related fatigue and quality of life in patients with ovarian cancer undergoing chemotherapy[J]. Oncol Prog, 2020.

[28] TIAN M L, HUANG J T, LI D D, et al. Effects of exercise-psychology-sleep nursing on quality of life and cancer related fatigue among esophageal cancer patients[J]. Chin J Mod Nurs, 2020.

[29] ZHAI J Y, LV Q J, LI Y P, et al. Research status of dietary factors and cancer-related fatigue[J]. Mod Prev Med, 2020.

[30] XIE Y, XIONG H P, RAO J F, et al. Nutritional status and its relationship with cancer-related fatigue among elderly lung cancer patients undergoing chemotherapy[J]. J Nurs Sci, 2020.

[31] NI C X, ZHOU Y, SUN Y Y, et al. Effect of refined nutrition intervention on nutritional status and cancer-related fatigue of elderly patients with lung cancer undergoing radiotherapy and chemotherapy[J]. J Clin Nursing's Pract, 2020.

[32] STARREVELD D E J, DANIELS L A, VALDIMARSDOTTIR H B, et al. Light therapy as a treatment of cancer-related fatigue in (non-)Hodgkin lymphoma survivors (SPARKLE trial): study protocol of a multicenter randomized controlled trial[J]. BMC Cancer, 2020.

[33] JOHNSON J A, GARLAND S N, CARLSON L E, et al. Bright light therapy improves cancer-related fatigue in cancer survivors: a randomized controlled trial[J]. J Cancer Surviv, 2020.

[34] REDD W H, VALDIMARSDOTTIR H, WU L M, et al. Systematic light exposure in the treatment of cancer-related fatigue: a preliminary study[J]. Psycho-oncology, 2017.

Conflict of Interest Statement: The author declares no conflict of interest.

Note: Figure translations are in progress. See original paper for figures.