

Effects of Exercise on Mood in Patients with Breast Cancer

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Abstract

Breast cancer continues to be one of the most commonly diagnosed cancers worldwide and this trend is also true of the situation in South Africa. The increasing efficacy of treatments brings about a therapeutic paradox, whereby patient survival intervals improve but many experience marked psychological distress following their diagnosis and treatment, sometimes for long periods thereafter. Patients experiencing such distress are typically treated with anti-depressants or anxiolytics and/or referred for psychotherapy. It has long been acknowledged that physical exercise has concomitant psychological benefits; however these benefits have not been routinely experienced by breast cancer patients who have historically been advised to rather reduce their levels of physical activity to relieve cancer-related fatigue. Recent findings show that the opposite may be true and that appropriate physical activity may play an important role in elevating mood and thereby improving physical recovery. This allows health-care professionals access to an important additional resource in the quest to improve patients' quality of life and their recovery post-treatment. Critically, however, the type of activities that patients are advised to follow must be individually designed to suit each patient's capabilities.

Introduction

Breast cancer is the most common cancer affecting women. Increasing numbers of women are surviving the disease due to new and increasingly effective treatments; however these treatments themselves are toxic and can affect both physiological and psychological consequences [1]. Treatment-induced symptoms such as mood distress and fatigue are found to be common to the majority of cancer patients [2]. Distress has been linked to treatment noncompliance which compromises 5 year survival rates [3]. Despite this vital link, psychological distress remains under- or un-diagnosed, leaving many patients at risk for further complications.

Physiological and Psychological Effects of Treatment

Various chemotherapeutic, radiation and hormone interventions can result in mood anomalies. Fatigue, decreased cardiorespiratory function, cardio toxicity, hair-loss, sleep disturbances, nausea and vomiting as well as pain are frequently associated with these treatment modalities and can significantly affect the patients' mood and quality of life [4]. Importantly, breast cancer in particular often experience lymphoedema of the arm and impaired movement [5].

In terms of mood, depression, anxiety, stress, fear of death, poor self-esteem and body image as well as loneliness and the sense of loss of control have all been documented in the breast cancer population [2,3].

Current treatment options for depressed mood comprise pharmacotherapy and psychotherapy, which for many patients are sufficient. However there exists a body of patients for whom these interventions are not appropriate for either personal or organic reasons.

Exercise and Mood

It is widely accepted that mental and physical health exerts a mutual effect on each other. Exercise in the healthy population is associated with feelings of psychological well-being and results in, inter alia, improved circulation, levels of fitness and feelings of general well-being. Growing evidence in the literature suggests that there is a significant correlation between physical activity and improvement in mood, specifically depression and anxiety [6-11].

This is explained according to the neurobiology of physical exertion and the fight-or flight response. Serotonin and norepinephrine are neurotransmitters which regulate mood, and at low concentrations may result in symptoms of depression. Serotonin levels increase after exercise as increased motor activity has the effect of elevating the firing rates of serotonin neurons. This results in an increase in the both the production of serotonin and its synthesis, thus increasing its concentration with a concomitant improvement in mood [3,12].

In healthy populations, the mood-enhancing effects of exercise have been shown to compare positively with both medication and psychotherapeutic treatment in patients experiencing mild to moderate depression [6]. The two primary forms of exercise are aerobic and anaerobic, distinguished by whether or not oxygen is metabolized in the production of energy.

Exercise in Cancer Patients

Historically, cancer patients have been advised to reduce activity to counter disease- and treatment-related fatigue. Newer research has shown the opposite to be true: sedentary habits may in fact, worsen symptoms of fatigue due to muscle catabolism and further compromise physical function. Contrary to traditional belief, cancer patients who exercise can significantly reduce their experience of treatment-related fatigue, elevate their mood and augment their quality of life [13,14].

Any form of exercise recommended to a patient must necessarily be designed for that individual, in terms of their physical capabilities, type of oncological treatment and their levels of fitness [15]. Chemotherapy cycles affect patterns of fatigue and exercise regimens must adhere to the levels of energy the patient will experience across the cycle [16].

Research has shown that walking is the exercise of choice for most breast cancer patients and that cycling is also suitable as it does not affect the upper body and possible lymphedema as much as other forms of movement. Upper body exercises are not excluded but a compression sleeve is to be recommended [17].

There are also other forms of exercise which have the potential to affect mood. Low intensity aerobic exercise such as yoga has been shown to positively affect mood and lower anxiety [18]. This is an alternative for those patients for whom higher intensity exercises are contraindicated [19]. The breathing techniques and meditation, in addition to specific physical yoga postures, have been found to positively affect mood. Yoga has been found to be more effective in regulating mood during active treatment rather than in post-treatment populations. One study found that yoga had marked fatigue-reducing benefits in breast cancer populations and that specifically the adherence to the intervention was critical to optimising fatigue reduction [20].

Contraindications to Exercise

General contraindications to exercise relate to patients' level of fitness. Any cardiovascular anomalies, infectious or metabolic diseases must be screened prior to beginning any new exercise regimen [1].

Contraindications specific to cancer patients include the avoidance of any physical exertion in the 24 h period after chemotherapy infusion or radiation. The increase in circulation may adversely affect treatment. Moreover, anaemia, nausea and/or vomiting after exercise, unusual fatigue, dizziness or blurred vision should also be regarded as contraindicative to further exercise [1].

Conclusion

Research has demonstrated that exercise positively affects mood in the general population and newer studies suggest the potential of exercise to positively influence mood in oncology patients. Clearly, this adds to the resources of healthcare professionals who have historically relied on pharmacotherapy and/or psychotherapy to treat mood anomalies in this population. Since the exercises that cancer patients can perform must conform to their physiological capabilities, recent research suggests that low-intensity aerobic exercise such as yoga and tai chi may be ideal exercise options for patients undergoing oncology treatment. Not only does the slower and less intense pace of these bridge the exercise/capability divide for patients on a physiological level but the mindfulness aspect of meditation and breathing have shown to be beneficial to mood in the oncology patient population.

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