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The role of Yoga in the complementary treatment of cancer

Abstract

The life of a cancer patient is complicated by a litany of physical, psychological, social and spiritual factors leading to anxiety, fatigue, depression and several other unpleasant emotional issues. Nausea and vomiting, insomnia and pain also contribute greatly to the overall discomfort. These symptoms often result in a significant reduction in the quality of life. A host of non-pharmacological therapeutic interventions have been tried to alleviate this associated physical and emotional issues in cancer patients, with limited success. Yoga therapy has increasingly demonstrated evidence based benefits in alleviating many of these cancer-related symptoms and in greatly improving the quality of life of these patients.

Keywords: yoga, cancer, anxiety, depression, fatigue, nausea and vomiting, cancer pain, quality of life

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Introduction

Yoga evolved over thousands of years in India. The ancient sages developed this practice as an integrative physical, psychological and spiritual regimen with the ultimate aim at establishing a 'union' with the 'Source'. This Eastern discipline in now popular in the West in a non-spiritual/non-religious format, comprising mainly of asanas (physical postures), pranayama (breathing exercises) and dhyana (meditation), with an emphasis on achieving and maintaining optimal health (both external and internal). It is estimated that in 2016, almost 36 million Americans practiced yoga.[1] Yoga practices trigger several neuro endocrine and hemodynamic changes that beneficially modify the initiation and/or progression of several human disease processes. These diseases include neurological, psychological, orthopedic, cardiovascular and pulmonary ailments. The positive impact of yoga on many other health conditions is also being investigated and scientific data is gradually accumulating. Favorable results have also been noted in alleviating some of the ancillary symptoms experienced by patients with cancer.[2] However, despite the increasing number of evidence based studies attesting to the beneficial effects of yoga as a complementary modality in cancer patients[3] and the popularity of complementary therapeutic modalities in these patients,[4] most oncologists are still not, proactively, recommending yoga therapy to their cancer patients.[5]

This article objectively scrutinizes the published studies and presents a brief review of the evidence based data attesting to the ameliorating properties of yoga, when used in patients struggling with several cancer related symptoms.

Methods

A comprehensive search of 'yoga and cancer' and several cancer and yoga related topics was carried out using PubMed (Medline) and PMC (PubMed Central) database of the US National Library of Medicine; National Institutes of Health. Other contemporary and complementary medicine databases were also queried and relevant publications were reviewed. Additional studies were identified by searching bibliographies of reviews and were also consulted, if relevant.

Results

Search under 'yoga and cancer' revealed 339 citations dating back to 1975 on PubMed. PMC revealed 2,736 full length articles. Other queries revealed: 'cancer and anxiety': PubMed:12,694, PMC:87,583; 'cancer and depression': PubMed:19,680, PMC:57,853; 'cancer and pain': PubMed:90,082, PMC:170,754; 'cancer and nausea and vomiting', PubMed:13,458, PMC:29,948; 'cancer and fatigue', PubMed: 16,246, PMC: 48,097; 'cancer and insomnia': PubMed:1,394, PMC:11,803; 'cancer and quality of life': PubMed:64,004, PMC:202,092. Results of similar queries involving yoga were as follows: 'yoga and anxiety': PubMed:539, PMC: 3344; 'yoga and depression': PubMed:514. PMC:3667; 'yoga and pain': PubMed:562, PMC:3579; 'yoga and nausea/vomiting': PubMed:10, PMC:329; 'yoga and fatigue': PubMed:206, PMC:1892; 'yoga and insomnia': PubMed:66, PMC:870; and 'yoga and quality of life': PubMed:626, PMC:4178.

Yoga Interventions used in Studies: There is no standardized approach in conducting yoga for clinical studies. This lack of uniformity stems from several factors. Firstly, there are several yoga styles - Anusara, Ashtanga, Bikram, Iyengar, Jivamukti, Kripalu, Sivananda, Sudarshan kriya yoga, Tibetan Yoga, Vinyasa yoga etc. Secondly, there are hundreds of commonly performed yoga poses, several versions of breathing exercises and many approaches to attain meditation/relaxation. Most clinical studies appear to utilize all three commonly performed formats of yoga - asanas (postures), pranayama (breathing exercises) and dhyana (meditation). The total time duration prescribed for the yoga practice varied from 60-90minutes, with a minimum participation of three times a week. Self-practice at home was allowed/encouraged in some studies. The study duration varied from 6weeks to 12weeks. Most study individuals participated for a minimum of 18 sessions of yoga. A typical session consisted of several yoga poses such as sun salutations, seated or reclining postures, standing poses, twists, transition poses; inversion etc. The duration of posture hold varied from 20 seconds to 5minutes. Breathing exercises included several techniques, such as ujjayi (ocean breath), bhastrika (bellows breath), nadi shodhana (alternate nostril breathing), etc. Meditation and deep relaxation was achieved

using different approaches such as mantra changing, imagery, lying with the eyes closed in savasana (corpse pose) etc. The duration of each modality varied from 20-40minutes. Most yoga sessions were conducted by certified yoga instructors

Discussion

Cancer is a major public health problem worldwide. According to the American Cancer Society, it is estimated that in 2017, there will be 688,780 new cancer cases diagnosed and 600,920 cancer deaths in the US.[6] It continues to be the second leading cause of death in the USA.[6] The statistics are equally dismal for the entire world - in 2012, there were 14.1 million new cases of cancer diagnosed and 32.6 million people were living with cancer.[7] In 2015, available data indicates that cancer caused 8.8 million deaths and was the second leading cause of death, globally.[8] It is estimated that in 2030, new cancer cases will increase to almost 21.7million and cancer deaths to 13million, around the world.[9] The period encompassing the diagnosis of cancer, its treatment and the post treatment rehabilitation, is often associated with a significant disruption in a patient's life. This entire period may be complicated by a litany of distressing factors and these include anxiety, stress and depression.[10] Fatigue and insomnia also contribute greatly to the overall discomfort.[11,12] Pain, both acute and chronic, is also common during this stage.[13–16] Chemotherapy may further bring disturbing nausea and vomiting.[17] These symptoms, unfortunately, often occurring concomitantly and result in a significant reduction in the quality of life of these patients.[18–20] A host of non-pharmacological therapeutic interventions have been tried in order to alleviate the cancer and its treatment related noxious symptoms, with limited success.[21–25] Yoga therapy has been demonstrating an increasing potential benefit in improving these cancer-related physical and emotional issues and greatly improving the quality of life of these patients.[26,27]

Anxiety

Symptoms of anxiety are part of everyone's life and are common in the general population,[28] but pathological anxiety is significantly more common[29,30] and often under-diagnosed in cancer patients.[31] Significant anxiety may affect from 2% to 14% of patients with advanced cancer.[32–34] Its presence is associated with a subjective increase in other symptoms[29] and experiencing decreased physical functioning.[35] Anxiety also results in a poorer quality of life in these patients.[36] Survival time is decreased.[37]

Yoga has beneficial effects in the complementary treatment of anxiety.[38] Meditation helps decrease anxiety in the cancer patients.[39,40] Yoga exercise also helps ameliorate cancer related anxiety.[41–43] Though the available data is positive, clinical studies in cancer patients remain limited.

Depression

According to current diagnostic criteria,[44] major depression is characterized by five or more of the following symptoms being present concurrently for at least two weeks:

A. Depressed mood,

B. Loss of interest in previously pleasurable activities

C. Feelings of inappropriate guilt or worthlessness

D. Recurrent thoughts of death or suicide

E. Psychomotor slowing or agitation

F. Disturbance of appetite

G. Disturbance of sleep

H. disturbance of energy and

I. Impaired concentration

One of the five symptoms must include depressed mood or diminished interest in previously pleasurable activities. It is a common ailment globally and carries the heaviest burden of disability among mental and behavioral disorders.[45] Major depression has a high rate of co-occurrence with other medical conditions.[46]

Depression is common in cancer patients,[47] with prevalence rates of 13% to 40%.[48,49] These rates are much higher than that seen in the general population.[50] About 20% to 30% of breast cancer patients experience severe depression.[51] Depressed cancer patients have a decreased quality of life.[52] The negative effect on mortality has also been documented.[53,54] Unfortunately, despite the availability of excellent therapeutic pharmaceuticals for this ailment, antidepressant therapy is often associated with non-efficacy, drug resistance[55] polypharmacy[56] non-compliance, relapses and a high cost.[57–59]

Several studies have provided persuasive evidence attesting to the benefits of yoga therapy in patients with depression.[60–63] Attenuation of depression has also been noted in patients with cancer, especially breast cancer, in several clinical trials.[64–66] A recent Cochrane meta-analysis of 23 studies involving 2166 participants concluded that moderate quality evidence exists in supporting the use of yoga for a therapeutic reduction in depression, anxiety and fatigue, when compared with other psychosocial/educational interventions, in patients with breast cancer.[67] Reduction of depression has also been noted in other cancers.[68] Interestingly, emotional benefits have also been seen in cancer caregivers with yoga therapy.[69]

Pain

Pain in cancer is common[70] and often the most feared symptom.[71] Pain may be due to the cancer itself, or its treatments, which may include surgery, chemotherapy and radiotherapy.[72] It is estimated that up to 20% of cancer patients are unable to find pain relief with conventional treatment.[73] When the malignant disease is advanced, almost 70% of patients may be unable to get rid of the pain.[74] Complementary therapies are often resorted to by these patients.[75,76] Some studies have demonstrated benefits of yoga in pain reduction in these patients.[77,78] Further studies are however needed for a better evidence based analysis and practical recommendations.

Nausea and vomiting

Nausea and vomiting in most animals is a protective function that serves to expel potential harmful substances from the gastrointestinal tract prior to their absorption and/or to prevent indigestible material from entering the gut.[79] In humans, nausea and vomiting is also seen in many physiological conditions, such as pregnancy[80] and motion sickness.[81] However, nausea and vomiting may accompany and often alerts humans to many disease processes, especially those involving the gastro-intestinal tract.[82] Nausea and vomiting is also a common side effect of cancer chemotherapy[83] and can be very distressing.[84–88] It remains one of the most difficult of all side effects to treat in these patients.[89,90] It greatly reduces their quality of life.[91] Its appearance may also lead to a dangerous refusal to continue essential cancer treatment.[92]

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Yoga therapy has also been studied in these patients, as a complementary modality. A small study in 2007, reported a significant decrease in post-chemotherapy-induced nausea frequency, nausea severity and intensity of anticipatory nausea and vomiting in patients practicing yoga when compared with the non-yoga control group.[93] However, a recent 8-week study did not demonstrate a benefit stemming from the practice of yoga in ameliorating symptoms of nausea and vomiting related to cancer chemotherapy.[94]

Fatigue

Patients with cancer frequently experience significant fatigue.[95,96] The prevalence rates may be as high as 75% in these patients.[97] Besides the cancer,[98] treatment with chemotherapy and radiotherapy is often associated with fatigue and this further reduces the patient's quality of life.[99–101] In one study, a quarter of the cancer patients experienced severe fatigue during a six month follow up, during palliative treatment.[102] Fatigue in cancer patients is also quite persistent and up to one third of them may experience it for up to 10 years after the cancer diagnosis.[103] Cancer-related fatigue is the most important cause of a decreased quality of life in these patients.[104] It's presence also appears to prognosticate a reduced survival.[105]

Physical exercise has been suggested to combat this often stubborn and persistent symptom.[106] Yoga has also been successfully tried. Besides incorporating exercise, yoga diminishes many adverse psychological emotions in cancer patients, further attenuating the feelings of fatigue.[107] Many participants also experience improved sleep patterns.[108] A Cochrane review, after performing a meta-analysis of 23 studies involving 2166 participants, concluded that yoga practice presented a moderate-quality evidence in reducing fatigue and sleep disturbances when compared with no therapy in cancer patients.[109]

Insomnia

Insomnia means poor-quality or inadequate sleep. It is characterized by one or more of the following problems: difficulty falling asleep, difficulty maintaining sleep, waking up too early in the morning or sleep that is not refreshing.[110] Sleep disturbances are common in the general population.[111,112] Pharmacological agents are commonly prescribed to help improve sleep quality and/or duration.[113] Lifestyle interventions and cognitive behavioral therapies are also commonly used.[114] Insomnia adversely affects the quality of life in many patients.[115] Yoga therapy, including mindfulness, has been helpful in the complementary management of sleep.[116,117]

Poor quality of sleep is extremely common in cancer patients,[118,119] but often ignored.[120] The causes are multifactorial and include cancer related symptoms, treatment side effects and a host of associated emotional factors.[121–123] The positive benefits of yoga in establishing better sleep in cancer patients has been reported in some studies.[124,125] A recent trial involving 410 patients demonstrated that the group participating in yoga noticed an improvement in several sleep parameters, including reduction in post-intervention medication use, when compared with standard care participants.[126] Yoga appears to play a beneficial role in the management of sleep disturbances in cancer patients.

Quality of life

The World Health Organization defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.[127] Quality of life (QOL) or health - is an individual's perceived physical and mental health and can be measured by several means, including self-reported questionnaires,[128–130] such as the Health-related quality of life (HRQOL),[131] SF-36,[132] EuroQol[133] and WHOQOL.[134] Quality of life is becoming an important consideration and its improvement, one of the therapeutic goals, in the treatment of many diseases, including cancer.[135]

Quality of life in cancer, is the physical, emotional, social and functional well-being and perceived symptom burden, from a patient's point of view.[136] Cancer diagnosis, treatment and survival greatly affect the QOL in these patients.[137] Several demographic risk factors also are related to cancer-related QOL.[138] QOL also appears to prognosticate survival in many cancers.[139–141] Yoga can improve the quality of life in cancer patients.[5,142] Several studies have shown that women with breast cancer realize a marked improvement in quality of life scores and emotional well-being with yoga therapy.[143–146] The beneficial effect of yoga on the quality of life has also been noted in other cancers.[147–149]

Conclusion

Due to the small number of studies, often with limited participants, no causal relationship between yoga and cancer connected pain alleviation, or yoga and cancer related nausea and vomiting relief, can be made. However, evidence based data clearly demonstrates that yoga therapy is a safe and acceptable adjunctive therapeutic intervention in cancer patients with many other disturbing ancillary symptoms. Larger and more robust studies have demonstrated that most cancer patients experience a decrease in fatigue and become more physically active, with yoga therapy. There is also a measurable improvement in their psychological wellbeing, especially with a clinically relevant reduction in depression. The overall quality of life is also significantly improved. Because of the small sample size of studies and a lack of a standardized yoga study protocol, the role of individual yoga interventions in alleviating specific cancer related symptoms, cannot be delineated. In general, however, yoga therapy, as a complementary therapeutic modality, has viable evidence based role, for alleviating several extremely distressing symptoms experienced by cancer patients.

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Conflict of interest

The author declares no conflict of interest.

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