

# An Evidence Based Approach to Integrative Oncology (Traditional Herbal Remedies and Complementary Medicine) for the Management of Complications in Head and Neck Cancers

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## ABSTRACT

**Introduction:** Many patients with cancer want to do everything within their power to fight the disease, manage its symptoms, and cope with the side effects of treatment. Cancer patients commonly use complementary, traditional, and integrative health approaches, such as nutritional supplements, special diets, herbal medicine, acupuncture, massage, and yoga.

Integrative oncology is more like a healing-oriented approach that takes account of the whole person, including all aspects of lifestyle by employing both conventional and unconventional as traditional or complementary and alternative medicine to achieve the best treatment and recovery and quality of life for patients.

The aim of this chapter is to review popular medical approach used by health care professional and patients for management of cancer or side effects of the treatment, and to gather evidence for their effectiveness in scientific literatures.

**Materials and Methods:** Major oncology resources pointing to complementary, alternative or traditional medicine modalities in cancer care, evidence-based articles, data obtained from integrative oncology clinics, and government organizations associated with cancer were the materials used in this chapter.

**Results:** A considerable amount of evidence suggests that integrative oncology approaches, may help to manage some cancer symptoms and side effects of the treatment. The evidences about some of these health modalities are significant, such as nutrition therapy, acupuncture, massage therapy, mindfulness-based stress reduction, and yoga; but for other complementary approaches (e.g., natural products), the evidences are more limited.

**Conclusion:** Studies have shown the growing trend in using integrative oncology approach worldwide. Most of these modalities are noninvasive and useful in reducing symptoms and side effects of conventional treatments and improving quality of life and increasing hope in patients.

**Keywords:** Complementary and alternative medicine; Nutraceutical; Natural; Side effects.

## INTRODUCTION

Head and neck cancer (HNC) is one of the highest rates of impaired quality of life when compared with other cancers [1]. HNC and the treatment can cause chronic and debilitating side effects, such as facial disfigurement, deconditioning and functional limitations for example, problems with breathing, speaking, and eating which cause loss of appetite, malnutrition and progressive weight loss [2]. Also, some complications such as weakness, fatigue, pain, sleeping disorders, are frequently reported by patients, thereby affecting the overall well-being and having harmful effects on the overall functional and psychological symptoms [1]. Hence, it seems these complications require a multi-disciplinary management method for patient care.

Integrative oncology is a system that uses evidenced-based complementary therapies to help control the physical and emotional symptoms that people commonly experience before, during, and after mainstream cancer treatments. This multi-disciplinary approach works cooperatively with the primary oncology team to build comprehensive and integrative care plans that are personalized, evidence-based, and safe to improve health, quality of life, speed recovery, and clinical outcomes [3-5].

In proper combination of traditional and complementary medicine with standard cancer treatments, some of the therapies can enhance wellness and quality of life. It is therefore emphasized that complementary therapies are not alternatives to mainstream medical care, but are evidence based with measurable results that can be tested and evaluated [5-8].

Integrative oncology is the first developed system that provides a comprehensive care system for cancer patients at every stage of treatment and level of clinical condition and is something more than supportive and palliative care. The patient in this method can be guided to make effective decisions about the most helpful therapies throughout their treatment program and beyond [9,7,10].

In addition to all the things mentioned, it is essential for healthcare team to pay adequate attention to safety, standardization, quality of drugs and methods, drug interactions, concurrent use of antioxidants with chemotherapy or radiotherapy, appropriate use of phytoestrogens, focus on metabolic interactions, prevention of hepatotoxicity and nephrotoxicity, and consideration for direct biological effect on cancer.

In integrative oncology system, both treatment and patient's quality of life are of high importance for patient care team. Cancer patients with worse quality of life were more prone to stop modern and current treatment; thus this should be as an alarm to oncologist concerning the risk for not completing therapy, and in such a situation, integrative oncology have played a significant role in enhancing the quality of life and developing the general well-being in patients [7,9,10].

Integrative oncology is faced with cancer (e.g. HNC) as a result of an imbalance of body, mind, spirit, environmental problems, and genetic problems; therefore, its multimodal treatment approach includes lifestyle modification, nutritional supplements, special diets, herbal prescription, oncology massage, acupuncture, exercise, psychology consultation, spirituality, and meditation to restore the balance [4,11]. Studies have shown that about 95% of cancer patients declared interest in at least one of these types of treatments if offered during their hospital stay [12].

The aim of this chapter is to review the popular medical approach used by health care professionals and patients in managing cancer or the side effects of its treatment and to gather evidence for their effectiveness in scientific literatures.

## **MATERIALS AND METHODS**

The following databases were searched: Pub Med and Google Scholar databases, DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology (Cancer: Principles and Practice (DeVita) (tenth)), National Institutes of Health (NIH) databases, University of Texas MD Anderson Cancer Center databases, and Memorial Sloan Kettering Cancer Center (MSKCC) databases. The following search terms were used in English: integrative oncology, complementary medicine, herbal medicine, traditional medicine, nutraceutical, nutrition, natural supplement acupuncture, massage, psychology, spirituality, anorexia, dry mouth, mucositis, infections and mouth sores, nausea, diarrhea, and constipation. In addition, a manual search was conducted using our own files and journals (focus on complementary and alternative therapies).

## **RESULTS**

### **Nutraceutical Diet/Natural Supplement/Traditional Herbal Medicine**

In 1940, for the first time, studies have shown that there is a relationship between nutrition and cancer [13]. Despite the numerous studies in recent decades which have examined the relationship between nutrition and cancer, just few factors such as obesity and alcohol consumption were

identified to be associated with cancer [13]. On the other hand, since toxicity remains a significant barrier for chemotherapy and radiotherapy, using natural compounds and traditional herbal medicine as an adjunct to chemotherapy and radiotherapy may decrease treatment toxicities and increase the therapeutic index [14-16].

Nutraceutical is defined as “a food or parts of food that provides medical or health benefits, including the prevention and/or treatment of a disease” by Dr. Stephen L and said by Avicenna in Canon and other Persian medicine literatures [17,18]. Nutraceuticals is increasingly suggested as an adjunctive for cancer prevention and supplement with conventional treatment [14,17]. Also, natural compounds have been supposed to be safer than synthetic compounds due to their wide availability, presence in the diet, and tolerability [14]. Various studies have been performed all over the world to study effects of natural compounds and traditional herbal treatments to alleviate the side effects of chemotherapy and radiotherapy [1,14,15,19-25].

Recently, concern in traditional medicine was revived by the World Health Organization (WHO) recommendations for using native knowledge as alternative national medicine [16]. Traditional medicines, which consist of herbal and nutritional supplements and some mineral and animal products, are mainly used as a method of self-treatment or prescribed by complementary and alternative medicine (CAM) practitioners [26]. Patients with cancer in all cultures are high users of herbal medicines generally as part of a regime containing various CAM modalities [25,27].

Studies based on traditional herbal medicine have demonstrated many herbal prescriptions for palliation of HNC side effects, such as xerostomia, mouth sores, taste change, hoarseness, difficulty in swallowing, nausea, poor appetite, weight loss, fatigue, pain, and sleep disorders (Table 1).

**Table 1:** Important approaches that use in integrative oncology.

| <b>Mouth Sores (Mucositis)</b> | <b>Traditional Herbal medicine [11,60-62]</b>  |
|--------------------------------|--|
| Dry Mouth (Xerostomia)         | Acupuncture [11,63,64]<br>Traditional Herbal medicine [11,15,65]   |
| Swallowing disorders           | Acupuncture [66]<br>Exercise (swallowing exercises) [67-69]<br>Acupuncture [64,70]   |
| Fatigue                        | Exercise and Physical Activity [41,70,71]<br>Oncology Massage Treatment [33,38,35]<br>nutraceutical supplement [72]<br>Traditional Herbal medicine [22, 26,73] |
| Pain                           | Acupuncture [46,64]<br>Oncology Massage Treatment [33,34,35,38]<br>Exercise and Physical Activity [41]<br>Traditional Herbal medicine [19,20, 26,73]           |
| Sleep disorders                | Acupuncture [64]<br>Oncology Massage Treatment [33,38]<br>Exercise and Physical Activity [41]<br>Traditional Herbal medicine [26]                              |
| Poor Appetite & Weight Loss    | Exercise and Physical Activity [74]<br>Traditional Herbal medicine [75,73]   |
| Speech disorders               | Exercise and Physical Activity [69]  |
| Nausea                         | Oncology Massage Treatment [33,38,35]<br>Acupuncture [27,42,64]<br>Traditional Herbal medicine [76,77]<br>Relaxation (Yoga) [78]<br>Acupuncture [42,27]        |
| Vomiting                       | Traditional Herbal medicine [76,77]<br>Relaxation (Yoga) [78]<br>Acupuncture [43]  |
| Anxiety                        | Oncology Massage Treatment [33,34,35,38]<br>Exercise and Physical Activity [1,41]<br>psychology consultation [27,47]<br>Relaxation (Yoga) [78]                 |
| Depression                     | Oncology Massage Treatment [35,38]<br>Exercise and Physical Activity [1,41]<br>psychology consultation [27,47]<br>Relaxation (Yoga) [78]                       |

## Foods That Prevent or Treat Cancer

The mainstream of the research recommends that eating fruit, vegetables, whole grains, and beans will lower the risk of developing cancer. Some foods that have role in our health by the American Institute for Cancer Research (AICR) are: Beans, Berries, Cruciferous Vegetables, Dark Green Leafy Vegetables, Flaxseed, Garlic, Grapes and Grape Juice, Green Tea, Soy, Tomatoes, and Whole Grains. No special or single food or food substances can prevent cancer, but plant-based diets can prevent cancer [28,29].

Health nutrition and habits are essential during cancer treatment to help cancer patients get the nutrients they require to keep up their body weight and strength and also fight infection.

Some cancer treatment outcomes are better when the nutrition is well with enough calories and protein. Patients with good nutrition may have a better prognosis and possibility of recovery and quality of life [29].

It is common for patients to have nausea and loss of appetite or not being able to eat what they usually do. The following orders may help:

- Keep away from sodas and other carbonated drinks and foods that cause gas, such as onion, beans, peas, broccoli, cabbage, brussels sprouts, green peppers, radishes, cucumbers.
- Increase calories by fresh and natural foods.
- Some good choice with high protein and calorie to enhance energy include: whole milk, eggs, nuts, fresh cheese, ice cream, peanut butter, meat, poultry, and fish.
- For constipation enlargement, using fiber and drinking lots of water is useful. Best sources of fiber include: whole-grain cereals (such as oatmeal and bran), beans, whole-grain breads, fruit, and vegetables [29-32].

Nutrition therapy can help reduce some side effects caused by surgery and radiation therapy to the head and neck (e.g. losses of appetite, changes in taste, pain when swallowing, dry mouth or thick saliva, sore mouth, narrowing of the upper esophagus) [29].

## Treatment of Some Major Side Effects

### Anorexia

The loss of appetite or desire to eat (Anorexia) is one of the most common troubles. The following may help:

- Eating in a relaxed and calm place.
- Getting regular exercise.
- Eating petite high-calorie and high-protein meals every 1 to 3 h instead of three large meals. Some good choices are cheese and crackers, puddings, muffins, yoghurt, milkshakes, ice cream, finger foods such as deviled eggs, ham on crackers, or cream cheese or peanut butter on crackers, and chocolate.
- Putting in additional calories and protein to food by honey, skim milk powder, butter, or brown sugar.
- Drinking special drinks that have nutrients as soups, milk, juices, shakes, and smoothies.
- Eating foods that smell good with mild odours [29-32].

### Dry mouth

Xerostomia, also termed dry mouth, is often caused by radiation therapy and certain medicines that may affect speech, taste, and the ability to swallow.

In addition to drinking plenty of liquids, other ways include:

- Moist the mouth with water at all times.
- Eating moist foods with added sauces, gravies, and butter.
- Drinking juice and fruit nectar instead of juice alone.
- Chewing gum.

Not using mouth washes that contain alcohol [29-32].

## Mucositis, infections and mouth sores

Mucositis can be caused by either chemotherapy or radiation therapy. Some orders that can help patients with mouth sores and infections are:

- Eating soft foods, soft fruits, nectars or soups that are easy to chew and swallow, such as bananas, apple sauce, watermelon, peach, pear, apricot, cottage cheese, mashed potatoes, macaroni, cheese, custards, puddings, gelatin, milkshakes, scrambled eggs, oatmeal or other cooked cereals.
- Avoiding citrus fruits and sour juices (such as oranges, tangerines, lemons, and grapefruit), hot, salty, rough, or dry foods.
- Drinking liquids with a straw.
- Cleaning teeth (including dentures) and mouth wash (four times a day) after eating and at bed time [29-32].

## Nausea

Some proceedings may help in decreasing nausea:

Eating bland, soft, and easy-to-digest foods and small meals, several times a day rather than heavy meals.

Eating dry foods for example crackers, bread sticks, or toast.

Slowly drinking fluids during the day.

Sucking or drinking hard candies or nectars of pomegranate, peppermints or lemon.

Keep away from spicy or greasy or foods that have strong odours that are likely to cause nausea in some patients [29-32].

## Diarrhea

Some proceedings may help control diarrhea:

- Eating broth, soups, bananas, sport drinks and canned fruits to replace salt and potassium lost by diarrhea.
- Drinking lots of fluids during the day.

Keeping away from greasy foods, hot or cold liquids, caffeine, high-fiber foods (especially dried beans and cruciferous vegetables such as broccoli, cauliflower, and cabbage), milk and milk products, foods and beverages that cause gas (such as peas, lentils, cruciferous vegetables, chewing gum, and soda), sugar-free candies or gum made with sorbitol (sugar alcohol) [29-32].

## Constipation

Because constipation is very common for cancer patients, preventing and treating constipation is a part of cancer care.

To prevent or treat constipation:

Eating more high fiber-containing foods. 25 to 35 g of fiber in a day such as adding wheat bran to the diet. Some good sources of fiber are: legumes (beans and lentils), vegetables, cold cereals (whole grain or bran), hot cereals, fruit, and whole-grain breads.

Using some over-the-counter constipation treatments, if needed. For example: bulk-forming products, stimulants, stool softeners, or osmotic.

Drinking 8 to 12 cups of water, prune juice, warm juices, lemonade, and teas without caffeine each day.

Walking and exercise regularly every day.

Enemas can also help with cottonseed or aerosol. But not lubricants or mineral oil because they may lead to losing some important nutrients [29-32].

## Massage therapy

Massage therapy is the manual manipulation of soft tissue planned to promote health and well-being. Massage therapy is one of the most popular methods of palliative care for alleviation of pain and other symptoms in cancer patients. Some reviews of the scientific literature have approved several helpful effects to massage, such as: improving the quality of patients' relaxation, sleep, and immune system responses and in the palliation of their pain, fatigue, nausea, and anxiety (Table 1) [33-35]. In accordance to an American Hospital Association survey, the rate of hospitals offering complementary therapies grew from 7.7% in 1998 to 37.3% in 2007, which is about 71% of those proposing massage [35,36]. There was a fear regarding whether massage could contribute to metastasis. That fear was based on the concept, that increased blood and lymph circulation might reinforce the extension of cancer [36]. Most massage schools now find out the inaccuracy of this subject and are revising how to address this issue. Studies have shown that site and survival of the diffused tumor cells depend on the properties and qualities of the tumor cell; specified tumor cells possess an affinity for certain organs. If circulation impresses cancer spread, numerous other accepted activities such as exercise, hot showers, and sexual activity could also be contributed to metastasis, while patients are always encouraged to exercise and do other activity as much as possible [36,33]. Generally, studies have mentioned that there are no adverse effects of massage in cancer patients [36-38,35,33]

There are a variety of massages usually offered by complementary therapists to patients with cancer. Swedish massage is the main method applied by massage therapists for cancer patients [36]. There is an important consensus that massage therapists need specialized training in

oncology massage and should have an additional knowledge, experience, and proficiency in safe practicing with cancer patients [36,39].

The National Comprehensive Cancer Network (NCCN), Memorial Sloan-Kettering Cancer Center (MSKCC), and MD Anderson Cancer Center recommend massage as “Guidelines for Supportive Care,” based on the scientific evidence of its safety and benefits for quality of life [33,35,36,40].

## **Exercise and physical activity**

Exercise interventions are principally relevant, because they have both physiological and psychosocial adverse outcomes [41]. Capozzi et al. [1] evaluated the effects of a clinic-supported group exercise program for HNC survivors for managing cancer and therapy complications to improve quality of life. They showed that progressive strength training is related to improved physical functioning and fitness outcomes and is associated to improved symptom management (that is, drowsiness and tiredness)[1]. So far, there are no specific exercise guidelines for HNC survivors. However, primitive research has certified the advantage of exercise for ameliorating general fitness, physical function, and psychological wellbeing among HNC patients [1].

## **Acupuncture**

- Acupuncture is increasingly offered as an adjunctive treatment for managing cancer-related symptoms, including: fatigue, pain, anxiety/mood disorders, sleep disturbance, nausea, radiation-induced xerostomia, hot flashes, and prolonged postoperative ileus [42,43]. A meta-analysis showed that the effectiveness of acupuncture or electro-acupuncture for cancer fatigue is currently not proven [44].
- To date, there is no report on the helpfulness of acupuncture for chemotherapy induced peripheral neuropathy [45].
- A meta-analysis mentioned that acupuncture did not have a better effect than drug therapy on pain. However, the effect of combination therapy (acupuncture plus drug) is more than only drug therapy. thus, this systematic review suggested that there is no strong evidence for the effectiveness of acupuncture in the management of pain in cancer [46].

So far, there are no systematic review for assessing the effects of acupuncture on anxiety, sleeping, nausea, and xerostomia, while there are numerous studies that show the positive effects of acupuncture in improving these symptoms and patient satisfaction [43].

## **Psychology consultation**

Psychological disorders are common problems that HNC cancer patients suffer from them [47,48]. Epidemiological studies have demonstrated various psychological factors associated to both cancer initiation (extension of cancer in patients who did not have previous tumor) and progression (development of disease in patients who had previous tumor) [49]. One meta-

analysis review study, which assessed 165 studies, mentioned the relationship between cancer and stress; the review study demonstrated that stress-related psychosocial agents are associated with more cancer incidence in initially healthful people [50]. Also, 330 studies showed that stress in cancer patients was associated with poorer survival. A further 53 studies showed that there were higher mortality in patients with cancer [48,50]. People with cancer, who have poor social support, experienced higher growth and progression of tumor due to increased pro-inflammatory mechanisms [49]. In addition, studies have shown that many HNC patients experience depressive symptoms after treatment [51]. Depression increases the risk of relapses subsequent cancer treatment, decreases adherence to anti-cancer treatment, and reduces the threshold of pain [48]. An inflammatory processes is a main factor that is related to distress, depression, pain, and cognitive disorders in cancer patients [48,52]. So, according to the importance of psychological factors in patients with cancer, it seems psychological counseling is one of the helpful treatment methods in treating cancer patients and improving their quality of life. There are various forms of treatment for psychological disorders. Creative psychological interventions (CPIs) are a form of psychological treatment that applies the expressive qualities of the creative arts, such as music, dance, movement, and drama in order to improve social, emotional, and physical well-being [53]. A systematic review noted that CPIs profit cancer patients with respect to quality of life, anxiety, depression, stress, anger, and mood; however, there was no evidence to show that any type of CPI is particularly beneficial [54].

## **Religious or spirituality or mind-body interventions in cancer**

Overall psychosocial interventions and religious or spiritual are helpful and potentially valuable for cancer patients' quality of life, hope, and other positive mood states. Some interventions related to religion or spirituality or yoga, meaning-centered therapy and life review therapy may be particularly useful for cancer patients in improving the outcomes and may be useful in allowing the expression of suppressed feelings of fear or anxiety. Although, a consistent negative correlation exists between intrinsic religiosity with depression and other negative mood states [55,56].

Spiritual elements can also be a major part of therapeutic interventions and have been shown to play important roles in coping with cancer. Yoga can help mindfulness and self-concern. Life review therapy may let patients to reframe their life and become more relaxed. Meaning centered therapy is related to better mental health outcomes [55]. Surveys have shown that that significantly higher levels of hope and positive moods existed in old patients with high levels of intrinsic religiosity and spiritual well-being [56].

It seems that religion and spirituality play a significant role in the daily lives of many cancer patients, so it is better that the health care team, including oncologists and nurses and the patient's relatives must evaluate and support intrinsic religiosity and promote spiritual well-being in cancer patients [55,56,57].

# CONCLUSION

The conventional cancer treatment involves three different modalities, such as surgery, radiation, and chemotherapy, while integrative oncology model points to expanding inter and multi-disciplinary approach to include other complementary or traditional therapies. These strategies will also have the greatest potential for improving the overall health, quality of life and well-being of cancer patients [4,7].

This modality is in response to the concept of treating the whole patient and total needs in all domains, while patients may perceive the gaps in their care with no adequate and comprehensive attention given to their needs [7,4]. Cancer patients also desire self-care strategies to control this impact on their lives and families [58]. In other words, integrative approach is the best way to improve the performance of cancer patients throughout the continuum of treatment [7].

Contrary to the impression that most patients used complementary or traditional medicine or herbs or vitamins, etc., to feel more hopeful unlike the alternative for main treatments and this may be the single greatest reason for using complementary and supportive cares and methods. In a rational thought, acceptance and documentation of these proceedings should become part of the routine appraisal for all patients [40].

In total, the oncology community, especially physicians and nurses, must be willing to be in touch with patients of integrative oncology and inform them about the possible contraindications or benefits, and participate in research to respond to questions of safety and efficacy and to educate patients [40,59].

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