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## Review Article

### Complementary Medicines and Cancer

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### Abstract

A great strength of patients uses complementary medicine, which is literally an adjuvant of conventional treatment because complementary medicine is an integrative approach. Conventional treatments have some harmful effects for patients, but many patients are using complementary medicine along with the treatment of mainstream cancer. It has proved to be a successful approach to improve the quality of life (QOL) of patients, by adding satisfaction and improvement in health condition. There are subtypes of the complementary medicine, such as Traditional Chinese Medicine, Biological based practices, Main-Body medicine, Energy medicine, and Manipulative and Body-Based Practices, available in the market. There are some significant or reliable evidences from previous studies, for the use and benefits of complementary medicines. The conventional treatment for cancer patients can operate quite safely, with the help of complementary medicine and there are some evidences that it reduces fatigue, nausea, pain, anxiety, depression, hormonal treatment, and psychological issues of patients. Physician must provide all the information about type and use of complementary medicine, along with the conventional treatment of cancer, while discussing the course of treatment strategy for better clarity of the patient and for the family.

**Keywords:** Complementary Medicine; Traditional Chinese Medicine; Biological-based Practices; Energy Medicine; Main-Body Medicine; Manipulative and Body-Based Practices

### Abbreviations

CAM: Complementary and Alternative Medicine;

CFR: Code of Federal Regulations;

FDA: Food and Drug Administration;

IRB: Institutional Review Board;

NCCAM: National Centre for Complementary medicine;

NCI: National Cancer Institute;

OTC: Over-the-Counter;

PSK: Polysaccharide Kureha;

QOL: Quality of Life;

TCM: Traditional Chinese Medicine;

U.S: United States

## Introduction

Cancer is listed as one of the life threatening disease and it affects one out of every three people, around the globe [1]. Out of eight deaths, one death is due to cancer, which is now becoming a global pandemic [2]. As per FDA 21 CFR 312.81(a), in terms of drug, the complete scenario of this term, "Life threatening" can be defined as "Diseases or conditions, where the likelihood of death is high, unless the course of the disease is interrupted; and diseases or conditions with potentially fatal outcomes, where the end point of clinical trial analysis is survival. The criteria for life threatening, does not require the condition to be immediately life threatening or to immediately result in death. Rather, the subjects must be in a life threatening situation, requiring intervention before review at a convened meeting of the IRB (Institutional Review Board), is feasible" [3].

Cancer diagnosis and treatment protocol is painful not only to the patient, but also to the families [4]. Other additional therapies are under experiments to heal them and to improve their quality of life, in terms of humanizing mind, soul and body. There comes the role of complementary medicine.

The complementary medicine refers to those medicines, which are used along with the conventional medicine treatment or with other standard treatment [5]. National Centre for complementary and alternative medicine (NCCAM) stated that the term, Complementary medicine, commonly refers to using a non-mainstream approach, together with conventional medicine system. They act as an adjuvant treatment system, with conventional treatment approach. [6] These complementary medicines include huge variety of therapies, products and health care practices like Acupuncture, Aromatherapy, Chiropractic Therapy, Herbal Remedies, Homeopathy, Hypnotherapy, Kinesiology, Meditation, Music Therapy, Progressive Muscle Relaxation, Reiki, Shiatsu, Spirituality & Prayer, Tai Chi and Yoga etc [7].

Complementary medicines are also used as a supplementary management system, for the treatment of cancer patients. With delayed treatment and diagnosis, treatment with conventional approach, leads to lesser chance of survival. Complementary medicine is helpful for control & cure of different symptoms, hence promoting enhanced well-being, quality of life and contributing to all over care for patients, in spite of undergoing tedious treatment plan. Generally, complementary medicines are cheap, safe and effective. Complementary medicines do not in-

terfere in the mainstream treatment plan. The same approach is seen at the Memorial Sloan-Kettering Cancer Center (Integrative Medicine Service), a cancer hospital at New York, under integrated medicine services section. They are add-on treatment approach, for better results of conventional treatment, which leads to a new terminology, "Integrative oncology" [8].

National Centre for Health Statistics and National Centre for complementary and alternative medicine (NCCAM) organized a National Health Interview Survey in 2007 and showed that 38% of adults in United States (U.S.) are using various types of complementary medicines [9]. Most commonly, the complementary medicine are used by women for breast cancer as compared to the male cancer patients, like prostate and colorectal [10]. As per facts, 75 % women with breast cancer prefer this treatment approach [11].

Today, most of the cancer patients are using complementary medicine globally. According to a study, approximately < 10% to >50% of patients in US, have used complementary medicine for the treatment of cancer [12,13].

## Preference criteria

There is no definite pattern for preference. Many studies have been conducted to understand the basic pattern for preference of complementary medicines, but it seems complex. As per study conducted on the 21 articles of cancer from different databases, like MEDLINE, Embase, and CISCOM, it was observed that 27% of the respondents, out of the 50% studied, had testimony for the used complementary medicines. 31.4% was the average number of respondents, reported to use the complementary medicines.

Socioeconomic status, gender, dissatisfaction from already available treatment approaches, peer pressure, cultural and religious beliefs are the few factors that decide the preference for the complementary medicines. These types of patients are generally females and those of younger generation because they are more conscious and also employ all mainstream medical devices than those people who do not want to use complementary medicine. In the recent years, there are some evidences of growth in the use of complementary medicine for cancer patients [14].

A current study stated that chiropractic therapies (7.6%), herbal medicine (9.6%) and prayer or spiritual healing (13.7%) are the most common therapies used by patients for cancer, which also reflects the wide number of over-the-counter drugs and their availability in the market [15]. Patients believe that complementary medicines can boost their physiological and psychological well being [16].

Statistical data presented on the basis of preference to different complementary medication systems (see Figure 1). According

to Barnes et al., 2008, Natural products are accounted for 17.7 %, in comparison to homeopathic treatment approach. All others are in between natural products and homeopathic treatment. This data gives an idea of the complementary medicines itself; preferences differ in accordance to the patient needs.

There are two investigations, which show that homeopathic medicine, naturopathic medicine and traditional Chinese medicine are most commonly used by cancer patients [24,25]. Along with this, only one investigation has reported about energy medicine (e.g., Reiki, Qi gong and therapeutic touch), as the preferred complementary medicine among cancer patients [26].

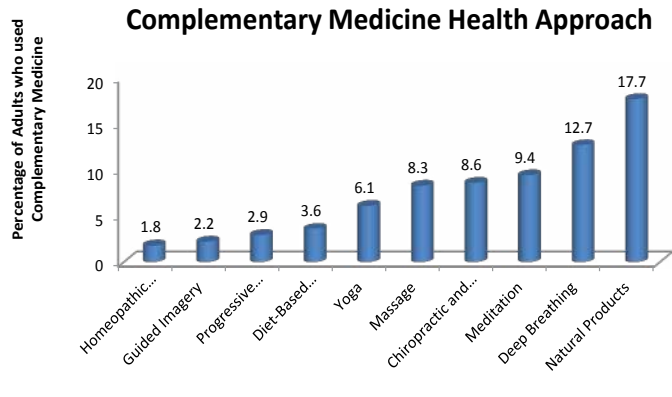


Figure 1. Complementary Medicine Health Approach [17].

This review paper mainly focuses on the different type of complementary medicines, which are used by patients for various diseases.

**Types of Complementary Medicine**

The empirical research has investigated that a huge variety of complementary medicines are used by cancer patients. National Centre for Complementary and Alternative Medicine (NCCAM) has grouped different complementary medicine (see Table 1 and Figure 2).

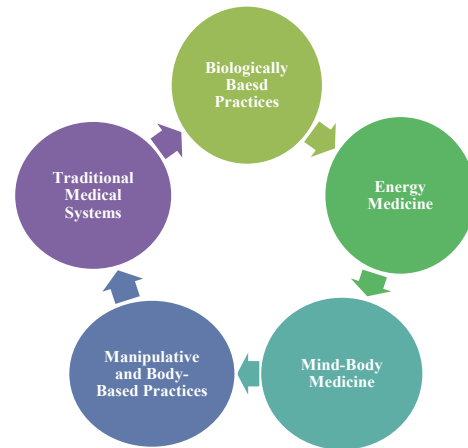


Figure 2. Types of Complementary Medicines.

There are following Complementary Medicines:

**1. Traditional Medical System:**

**1.1 Ayurveda:** Since ancient times, Ayurveda has helped people in the treatment of disease, even life threatening diseases, like cancer. Ayurveda is a combination of two words and that are Ayur (life) and Veda (knowledge). The word, Ayurveda belongs to Sanskrit. Ayurveda has a lot of treatment regimens for the improvement of health, and also for different body types. Ayurveda also uses different techniques like meditation, yoga and many other things, which are also helpful for detoxification and cleansing of body [8].

Ayurveda is well-renowned to manage the cancer in various ways, like curative, supportive, palliative and prophylactic care. Ayurveda also has lots of benefits to improve the health of cancer patients, such as it is used as additional or co-therapy with conventional treatment, reduces the dose and side effects of drugs in conventional treatment, helpful in targeting individual tissue, and ayurveda also diminishes the growth of cancer inpatients [27].

**1.2 Homeopathy:** Homeopathy or Homeopathic medicines are a group of complementary medicines, in which diseases are treated by natural substances. It was developed in 18th century, in Germany, before the arrival of medicine. The basic principle of Homeopathy is vigorous shaking of a substance to extract its vital essence, concept of serial dilution or potentiation

Types of Complementary Medicine	Subtypes Complementary Medicine
Biologically Based Practices	Herbs, vitamins, dietary supplements, and natural therapies such as shark cartilage
Energy Medicine	Biofield therapies such as Qigong, Reiki, or therapeutic touch and bioelectromagnetic-based therapies such as pulsed fields, alternating-current and direct-current fields, or magnetic fields
Mind-Body interventions	Meditation, prayer, mental healing, art therapy, music therapy, dance, patient support groups and cognitive-behavioral therapy
Manipulative and Body-Based Practices	Chiropractic, osteopathic, and massage, Acupuncture
Traditional Medical Systems	Ayurveda, Homeopathic medicine, naturopathic medicine, traditional Chinese medicine

Table 1. Different Complementary Medicines and their subtypes [18].

NCCAM reported that out of thirty three selected studies, nine studies of mind-body medicine (e.g. music therapy, dance and meditation) are frequently used by women for breast cancer, and twenty one reported that biologically based practices (e.g. vitamins, dietary supplements and herbs) are more fruitful as complementary medicines [19-23].

and principle of similia or similarity, which means, like cures like. The healing process of body in homeopathy is encouraged by various diluted substances, which are derived from plants, minerals and animals [8].

In 2007, researcher stated that Homeopathic drug, shows positive response, *in vivo* and *in vitro*, in higher or lower potency of drugs, in both humans and animals. There is a dilemma among cancer patients, to decide the treatment for cancer because chemotherapy and radiotherapy has a lot of side effects, while homeopathy doesn't have any such side effects [28].

Homeopathic medications are easily available in the market in the form of over-the-counter drugs.

The efficacy of homeopathic medication is not like that of conventional medicine because it contains not more than one molecule of the original substance, which means that the solution doesn't have anything [29]. The different meta-analysis and systemic reviews of homeopathy clinical trials, determines that there is no substantial evidence, but it shows positive response, despite the medical condition and stage of cancer patient [30-32]. Even though, any claims made for treatment of any ailment, including cancer, will be governed by FDA itself and hence, cannot be sold as an OTC.

**1.3 Naturopathy:** Naturopathy is a treatment system, which works on the "natural" healing approach. It includes control of diet, massage, exercise, movement, nutrition and manipulation of body. Naturopathy enhances the effectiveness of conventional medication, improves the immune system, and can slow the growth of tumor.

The basis of Naturopathy is its belief that body will recover, repair and relief from the problem, when simply a healthy environment is created inside the body. Naturopathy includes mistletoe, red clover, saw palmetto, wheat grass and flax seed oil etc [8].

**1.4 Traditional Chinese Medicine (TCM):** According to the Traditional Chinese Medication system, human beings are inter-connected with nature and also affected by different forces. It believes that each and every part of the body performs an individual function, but according to them, the disease is created, when the body performs an imbalanced function [33].

So, the TCM solves these problems with the reestablishment of the balance of energies, like yin-yang, dampness-dryness, heat-cold, or disruption in the circulation of Chior Qi (Vital force & Life energy), which produces illness. TCM have different diagnostic techniques, which determine the treatment. The different diagnoses are the palpation of the radical pulse for its speed and tactile characteristics, examination of complexion

and tongue coating, and detection of distinctive scents in the body material [8].

More than hundreds of preparations of minerals, botanicals and animals have been classified in Traditional Chinese Pharmacopoeia, and around 140 biological actives or more such compounds, have been isolated from different medicinal plants.

Camptothecin, paclitaxel, vincristine, and indirubin are developed from *Camptotheca acuminata*, *Taxus chinensis*, *Catharanthus roseus*, and *Baphicacanthus cusia*, respectively, and are few anti cancer agents, produced from plants [34].

**2. Biological Based Practices:** Generally, biological based practices are herbs (see Table 2), vitamins, dietary supplements, and natural therapies, such as shark cartilage, used by cancer patients. Cancer patients generally use over the counter dietary supplements. According to Women's Healthy Eating and Living Study, more than 80% of cancer patients are using dietary supplements like herbs, vitamins and anti-oxidants. Recently, the use of herbal products has increased, rather than other supplements [35,36].

Generally, patients or other people are not aware about these herbs, and these herbs are dilute natural drugs, which consist of different type of chemicals.<sup>[37]</sup> Even Food and Drug Administration (FDA) and any other agency has not investigated the potency, effectiveness and safety precaution for the herbal drugs, but a small number of products have been examined, for quality control or for side-effects. During the treatment of cancer, some herbal medications should not be taken with the conventional medications because some of the herbal medications can cause interaction with conventional medicine, such as interaction with various anesthetic drugs during surgery, irritation of skin in radiation therapy, and unstable blood pressure [38].

Patients are advised, not to use ginger, garlic, ginkgo, and feverfew, when they are on aspirin, heparin, Coumadin, and other related agents, due to their anti-coagulant effects [39]. Diet, which contain anti oxidant agents, should also be examined prior to radiation and chemotherapy, as it is prone to cause effects.

Herb	Popular	Result
Essiac	North America	Anticancer: No clinical study support their effects though
Iscaador	Europe	Anticancer: Mixed results
Mushroom-derived compounds	Japan	Anticancer: Not well supported. Although approved in Japan, a relation between treatment with PSK, is proposed with HLA.

**Table 2.** Biological Herbs with their geographical areas and mode of action.

The combo of eight different herbs, but in those, two were from Traditional Chinese Medication, PC-SPES (PC refers to the prostate cancer, SPES (Latin word), which represents hope), diminished prostate specific antigen levels in men, even if the cancer was dependent on androgen levels [40-43].

**3. Energy Medicine:** Energy medicine system belongs to the theory of energy field, which surrounds the human being. In this medication system, the treatment of cancer can be done by manual manipulations in some energy like electromagnetic fields, or therapeutic touch, or Qigong. However, these energies have not been scientifically proven by any scientific organization. In the therapeutic touch, there is no direct contact with the body because therapist moves their hands above the body of patients and eliminates blockage of energy field from the patients [1]. Many therapists of therapeutic touch are popular in US and claim to cure cancer. These therapists strongly convince the patients for the treatment because this intervention produces lesser difficulties, when patients get the benefits of this therapy [44].

Second most commonly used energy medicine system is Bio-electromagnetic field that uses magnetic field, direct and alternating current, and pulsed system, for the treatment of various diseases. A wide variety of clinical trials have been tested to analyze these therapies in controlling migraine headaches [45], pain [46,47], epilepsy [48] and tremor [49], but there is no data which supports its role in treating disease or illness.

**4. Mind-Body Medicine:** Mind-Body Medicine system, contains a huge variety of therapies such as Meditation, prayer, mental healing, art therapy, music therapy, dance, cognitive-behavioral therapy, and patient support groups. These therapies use corresponding relationship between mind and body, by which patients get relaxed, and the stress or symptoms, related to the treatment of cancer patients are diminished. Conventional practitioners, like clinical psychologist, generally use hypnosis and relaxation therapies with the conventional treatment because some of the clinical trials have shown the consequences of hypnosis on malignant and procedural pain [50,51], mood, depression and anxiety in the cancer patients [52-54]. This therapy is also effective against chemotherapy for patients.

Music therapy is also another good option for the treatment of cancer with conventional treatment. Musical therapy is done by a professional Music Therapist, who is having a graduate degree in music therapy and has solved patient related clinical and psychosocial issues. Music therapy is very effective to give peace to the patients, and the proper treatment with this therapy, reduces the pain, depression and anxiety [8].

**5. Manipulative and Body-Based Practices:** These therapies generally include Chiropractic, osteopathic, massage and acupuncture. Massage and acupuncture are frequently used by the cancer patients. Acupuncture is also a therapy of Traditional Chinese System. Acupuncture is a treatment approach by the application of needles, heat, laser light or pressure to the specific acupuncture points on the skin of the body, and is very effective in pain, headaches, nausea and vomiting, allergies, depression and cancer [55]. Acupuncture stimulates the release of neurotransmitters, which makes you feel more comfortable or relaxed. Cancer patients say that it improves health of the body and it also helps to relieve from sickness, caused by conventional treatment of cancer. Some patients believe that it reduces the side-effects of the cancer and helps them to sleep better and feel healthier [56].

Massage is also one of the greatest therapies for cancer patients, which are beneficial and effective treatment for seriously ill cancer patients because their random trial reduces the depression and anxiety for psychiatric patients or older cancer patients [57,58]. Massage can also control the treatment regimens of conventional approach and reduces fatigue, nausea and anxiety of the cancer patients.

### Use of Complementary Medicine

Complementary medicines are generally used with the conventional treatment, such as chemotherapy or radiotherapy. These medicines are helpful to reduce the symptoms of cancer and also reduce the side-effects, such as fatigue, nausea, pain, anxiety, depression, hormonal treatment, and psychological issues of conventional treatment.

There are some investigational reports on the cancer patients about the type of complementary medicine they use and the reason of use (see Table 3).

Study	Sample	Type Of Complementary Medicine	Reason For Use
Owens et al., 2009	Cancer Patients	Prayer (93%), humour (83%), music (70%), exercise, (65%), relaxation therapy (44%), spirituality (40%), imagery (32%), massage (27%), herbs (26%), folk therapy (22%), group therapy (17%), diet (16%), energy therapy (11%), yoga (11%), biotherapy (10%), homeopathy (7%), chiropractor (6%), Reiki, (5%), acupuncture (4%), and hypnosis (2%)	Not specified
Kremser et al., 2008	Cancer Patients	Vitamin supplements (54%), support groups (50%), massage (41%), meditation (39%), diets (24%), yoga (22%), herbal remedies (19%), juices (16%), Reiki (15%), acupuncture (14%), exercise (10%), reflexology (8%), homeopathy (8%), art therapy (5%), tai chi (5%), Chinese medicine . (5%), dragon boating (5%), bach flowers (4%), naturopathy (4%), and shark cartilage (4%)	Patients believed CAM improved their immune system, reduced side effects of treatment, prevented the recurrence of cancer, treated cancer, and reduced symptoms associated with breast cancer.
Chen et al., 2008	Cancer Patients	Supplements such as sporophyte, vitamins, fish oil, or ginseng (77%) and traditional Chinese medicine, such as herbal medicine and acupuncture (71%)	To treat cancer, boost the immune system, and decrease menopausal symptoms



Fasching et al., 2007	Cancer Patients	Dietary supplements (77%), mistletoe therapy (74%), enzymatic therapy (59%), immune- augmentative therapy (55%), physical therapy (51%), traditional Chinese medicine (43%), bio- logic treatment (29%), cancer diets (20%), and psychological therapy (20%)	Not specified
Balneavs et al., 2006	Cancer Patients	Vitamin or mineral supplements (68%), herbal or plant (42%), spiritual therapies (35%), physical or movement therapies (32%), psychological or expressive therapies (24%), alternative medical systems (17%), energy therapies (16%), pharmacologic or biologic supplements (15%), diet therapies (10%), and others (3%)	Not specified
Molassits et al., 2006	Cancer Patients	Herbal medicine (46%), spiritual therapies (21%), relaxation (21%), teas (20%), homeopathy (19%), vitamins or minerals (15%), massage (15%), visualization (10%), acupuncture (10%), animal extracts (9%), and support groups (8%)	To fight cancer, improve physical and emotional well-being, increase hope and optimism, and counter ill effects
Montazei et al., 2005	Cancer Patients	Prayer or spiritual healing (74%), bio energy (12%), homeopathy (3%), herbs (3%), acupuncture (2%), meditation (2%), yoga (2%), sports medicine (2%), and counselling (2%)	Not specified
Rakovith et al., 2005	Cancer Patients	Dietary methods such as vitamins and low-fat vegetarian diets (91%), psychological methods such as meditation and relaxation (54%), physical therapies such as massage (39%), and herbal or homeopathy (31%)	To cure cancer, prevent the spread and recurrence of cancer, assist other treatments, relieve symptoms, boost the immune system, increase quality of life, and give a feeling of control
Yap et al., 2004	Cancer Patients	Extracts from organisms such as evening prim- rose oil or fish oil (28%), herbal therapies (24%), and minerals (11%), energy life force therapies such as acupuncture and life path (5%), vitamins (3%), immune boosters (1%), diet therapies (1%), and drugs (1%)	Not specified
Cui et al., 2004	Cancer Patients	Traditional Chinese medicine (87%); Chinese herbal medicine (86%); supplements (85%); physical exercises such as Qi gong, tai chi, and gongfu (66%); support groups (17%); and acupuncture (5%)	Patients believed that it would treat their cancer, enhance their immune system, prevent metastasis or manage other discomforts, and lessen menopausal symptoms.
Van der Weg & Streuli, 2003	Cancer Patients	Mistletoe (74%), homeopathy (24%), diets (12%), bach flower remedies (10%), music and colour therapy (7%), massage (7%), spiritual healing (7%), metals and crystals (7%), hypnosis (2%), acupuncture (2%), osteopathy (2%), bio-feedback (2%), and Simonton therapy (2%)	Patients wanted to do as much as possible, to feel more hopeful, and to harness their mental energy; they also believed CAM was nontoxic, corresponded well to their lifestyles, addressed their disappointment in conventional treatment, and helped them avoid chemotherapy or radiotherapy.
Abdullah et al., 2003	Cancer Patients	Lingzhi (45%), shark cartilage (44%), fungi (29%), ginseng (14%), Qi gong (14%), and others such as herbs and vegetables, natural therapy, animal or animal extracts, or Chinese medical practitioners (35%)	Many believed CAM could serve as a supplement to orthodox treatment.
Patterson et al., 2002	Cancer Patients	Dietary supplements (65%); mental therapies such as meditation, spiritual activities, and prayer (19%); and alternative providers such as naturopathic physicians, massage therapists, and spiritual advisors (17%)	Patients used CAM for general health and well-being, to treat their cancer, to ease cancer-related symptoms, and to treat other diseases.
Salmenea, 2002	Cancer Patients	Vitamins, trace elements, or antioxidant treatments; dietary supplements and natural products; spiritual healing; homeopathy and extract of mistletoe; and other types such as aromatherapy and reflexology	Patients believed they were doing as much as they could do; CAM gave them hope and addressed their disappointment in conventional treatments.

Moschèn et al., 2001	Cancer Patients	Vegetable drinks (53%), megavitamins (51%), mistletoe (49%), minerals (48%), special diets (36%), homeopathy (31%), special teas (29%), relaxation training (26%), enzyme (20%) and thymus preparations (15%), and other (29%)	Patients sought an active role in their treatment, had a wish to leave nothing untried, felt CAM complemented conventional treatment, and believed CAM was a gentle treatment free from adverse effects
Alferi et al., 2001	Cancer Patients	Meditation or imagery (29%), support groups (23%), psychotherapy (22%), spiritual healing (21%), herbal medications (14%), massage or body therapy (11%), and acupuncture (1%)	Not specified
Lee et al., 2000	Cancer Patients	Mental methods (30%), dietary therapies (27%), physical methods (14%), herbal or homeopathy (14%), and others (1%)	Not specified
Rees et al., 2000	Cancer Patients	Massage or aromatherapy (14%); psychotherapy (13%); chiropractic or osteopathy (10%); relaxation, yoga, and meditation (8%); healing (8%); reflexology (5%); herbal medicine (3%); nutrition (3%); hypnotherapy (2%); and use of support groups (1%)	To cure or slow down cancer and relieve symptoms
Burstein et al., 1999	Cancer Patients	Psychological therapies such as relaxation, spiritual healing, imagery (29%) and healing therapies such as megavitamin, herbs, massage, and acupuncture (28%)	Not specified
Balneavs et al., 1999	Cancer Patients	Meditation or relaxation (64%), vitamins or tonics (58%), spiritual or faith healing (54%), herbal remedies (50%), special food or diets (27%), immune therapies (23%), massage (19%), detoxification (17%), and shark cartilage (8%)	Patients believed that CAM assisted the body's natural ability to heal.
Crocetti et al., 1998	Cancer Patients	Homeopathy, manual healing, herbs, and acupuncture	Physical distress

**Table 3.** Different Studies of Complementary Medicine for Cancer Patients [59].

### Effectiveness of Complementary Medicines for Cancer: [60-80]

Till now, cancer has remained untreatable with the use of complementary medicines or practices. However, this approach has the potential to manage the symptoms of the cancer or side effects associated with the treatment and hence, improve the QOL.

#### 1. Use of Complementary Medicines for the Management of Cancer based Symptoms and treatment side effects

Some of the complementary approaches that have been used to manage the symptoms of cancer and the treatment side effects include, acupuncture, yoga, mindfulness-based reduction of stress and massage therapy. However, some of these approaches are reported to be interfering with the conventional treatment or lead to some other risks. So, the people must use these approaches, only after consulting with their health care providers.

Based on some substantial evidence, acupuncture is reported to be helpful in the management of nausea and vomiting, caused due to treatment, in the cancer patients. However, much evidence is not available for the potential of acupuncture in relieving cancer pain or hot flashes, due to the treatment. The complications associated with this method are quite rare,

as long as the sterile needles are used and proper procedures are followed.

The herb ginger is found to relieve the nausea, caused due to cancer chemotherapy, when given along with conventional anti-nausea agents.

Massage therapy is known to relieve the symptoms of cancer patients, like nausea, pain, depression and anxiety. Due to the limited research done in this field, investigators are unable to reach to any conclusion, about the effectiveness of massage therapy. This therapy should be taken after consultation with the health care providers, regarding any precautions to be taken. Deep or intense pressure-based therapy should be avoided along with certain sites, like the areas that are directly above the tumor or the skin, which is sensitive after undergoing radiation therapy.

Mindfulness-based stress reduction is found to relieve the cancer patients from the symptoms like general mood, fatigue, stress, anxiety, sleep disturbances and hence, improving the QOL. The major proportion of the participants in this group include the cancer patients of the early stages, mostly breast cancer, and therefore, provide the strongest evidence in the favor of this approach.

Some of the evidences obtained from the preliminary studies suggest the effectiveness of yoga in improving fatigue, distress, anxiety and depression in cancer patients. However, not much of the studies have been done, using this approach, and some of them do not have the highest quality. Cancer patients should talk to their healthcare providers, in order to know, if yoga can be of any harm to them, due to involved physical activities.

Biofeedback, relaxation therapies and biofeedback are known to provide possible benefits in the management of symptoms of cancer and side effects, associated with the treatment.

Although, herbal supplements are known to be effective in the management of side effects and cancer-related symptoms, like fatigue, pain, nausea, vomiting and sleep disturbances, but according to a review of the research literature, done in 2008, there are limited scientific evidence for its effectiveness and some of the trials are poorly designed. The concern, regarding the use of herbs, is their potential to interact with conventional treatment methods, negatively.

## **2. Use of Complementary Medicines for treatment of Cancer**

None of the complementary approach has the potential to treat cancer or cause its remission. Complementary medicines might interact with conventional methods or bear other risks.

Studies on use of herbal supplements in the treatment of can-

cer are limited. In addition, they are also known to interact with the drugs, used in chemotherapy, in a negative manner.

Efficacy of vitamin and mineral supplements, along with antioxidant supplements, in the treatment of cancer, is uncertain. According to NCI, cancer patients should consult with their health care providers, before using these supplements.

In a trial supported by NCCAM in 2010, standardized extract of shark cartilage, was observed to show no benefits, when given to the patients with advanced lung cancer, along with chemotherapy. Similar results were obtained in patients with breast cancer of advanced stage and colorectal cancer.

Laetrile was also found to be ineffective in the treatment of cancer, according to a systematic review of the research, done in 2011. Laetrile is reported to be toxic in nature, especially, when given via oral route, due to the presence of cyanide.

## **3. Use of Complementary Approach in the prevention of cancer**

In a trial conducted in 2012, multivitamin and mineral supplements have been associated with the reduction in the risk of cancer in elderly patients. Except this, no other approach has proven to be efficacious in the prevention of cancer, instead, have lead to enhanced health risks.

The study, conducted in 2012, constituted 14000 male physicians, from US and they were given, the supplement or a placebo, randomly for 11 years. There was 8 percent lower cancer in those, who took supplement as compared to those, who took placebo.

In another study, patients taking vitamin E or vitamin C, in high doses, did not have lower risk of prostate cancer or other cancer. However, the risk of hemorrhagic stroke increased, in men, who administered vitamin E.

A meta-analysis of around 22 clinical trials, done in 2010, showed no evidence of the prevention of cancer by antioxidant supplements

In two studies of larger scale, the evidence was found regarding the enhanced risk of lung cancer among the people, who smoke, following administration of supplements constituting bet-carotene.

In a review done in 2009, comprising of data from 51 studies, the evidence for the relationship between consumption of green tea and prevention of cancer, was found to be insufficient and contradicting. Other herbal products, which have undergone investigation for cancer prevention potential, include *Ginkgo biloba*, isoflavanoids, extract of grape seed, pomegranate, and noni. However, no conclusion has been reached for the same, till now.

## Conclusion

Now, most of the complementary medicines are commonly used by the cancer patients, and these are generally safe for the cancer patients because these therapies deal with experienced and qualified professionals. These medications are really helpful to diminish the side-effects and symptoms, appeared due to different type of treatments like chemotherapy and radiotherapy. Complementary medicine helps cancer patients to reduce fatigue, nausea, pain, anxiety, depression and enhance quality of Life (QOL) by satisfaction and encourage comfortable relationship with physicians. The complementary medicine is also helpful for cancer patients to avoid the treatment with conventional medications. Recently, it is of utmost importance to improve the research field of complementary medicine because cancer patients want to continue these medications along with conventional treatment. Cancer patients are giving the priority to complementary medicines as compare to conventional treatment because these medications are comparatively cheaper than conventional therapy. It is important to provide or aware the patients about all the information, regarding complementary medicine, by open access to websites, by contenting patients' and physicians' knowledge, or by other reliable sources of information. It acts as an adjuvant therapy, to improve the treatment of cancer and reduce the untoward effects of the chemotherapy, radiotherapy or other treatments, which are very costly and painful. Many cancer related organizations have already integrated complementary medicine, as a standard treatment protocol for the treatment of cancer patient. Their role is still to be discovered, in terms of cancer treatment.

## References

- Ejiforma R. Nigeria: Foundation offers free Cancer Screening. 2014.
- Brawley O. Most cancers in our world pandemic are preventable-here's how. 2014.
- Emergency Use of an Investigational Device Policy and procedure. 2015.
- Glajchen M. The emerging role and Needs of Family Caregivers in Cancer Care. *J Support Oncol*. 2004, 2: 145-155.
- Complementary and Alternative Medicine. National Cancer Institute. 2015.
- Mishra SK, Trikamji B, Togneri E. Complementary and alternative medicine in chronic neurological pain. *Indian Journal of Pain*. 2015, 29(2): 73-81.
- Complementary and Alternative Medicine Sourcebook. Health Reference Series. Fourth Edition, Omigraphics. Detroit MI 48231.
- Cassileth BR, Deng G. Complementary and Alternative Therapies for Cancer. *The Oncologist*. 2004, 9:80-89.
- National Center for Complementary and Alternative Medicine. The use of complementary and alternative medicine in the United States, 2009.
- Fasching PA, Thiel F, Nicolaisen-Murmann K, Rauh C, Engel J et al. Association of complementary methods with quality of life and life satisfaction in patients with gynecologic and breast malignancies. *Supportive Care in Cancer* 2007;15(11):1277-1284.
- Astin JA, Reilly C, Perkins C, Child WL, Susan G Komen. Breast cancer patients' perspectives on and use of complementary and alternative medicine: A study by the Susan G. Komen Breast Cancer Foundation. *Journal of the Society for Integrative Oncology*. 2006, 4(4): 157-169.
- Weiger WA, Smith M, Boon H, Richardson MA, Kaptchuk TJ et al. Advising patients who seek complementary and alternative medical therapies for cancer. *Ann Intern Med*. 2002, 137(11): 889-903.
- Lee MM, Chang JS, Jacobs B, Margaret R W. Complementary and Alternative Medicine use among men with prostate cancer in 4 ethnic populations. *Am J Public Health*. 2002, 92(10):1606-1609.
- Ernst E and Cassileth BR. The prevalence of complementary/alternative medicine in cancer: A systemic review. *Cancer*. 1998, 83(4): 777-782.
- Ni H, Simile C, Hardy AM. Utilization of complementary and alternative medicine by United States adults: results from the 1999 national health interview survey. *Med Care*. 2002, 40(4): 53-358.
- Vickers AJ, Cassileth BR. Unconventional therapies for cancer and cancer-related symptoms. *Lancet Oncol*. 2001, 2(4): 226-232.
- Barnes PM, Bloom B, Nahin RL. Complementary and Alternative Medicine Use among Adults and Children: United States. *CDC National Health Statistics Report*. 2008, 10(12):1-23.
- National Center for Complementary and Alternative Medicine 2009b. What is CAM?.
- Alferi SM, Antoni MH, Ironson G, Kilbourn KM, Carver CS. Factors predicting the use of complementary therapies in a multi-ethnic sample of early-stage breast cancer patients. *Journal of the American Medical Women's Association*. 2001, 56(3): 120-123.
- Balneaves LG, Kristjanson LJ, Tataryn D. Beyond convention: Describing complementary therapy use by women



- living with breast cancer. *Patient Education and Counseling*. 1999, 38(2):143-153.
21. Burstein HJ, Gelber S, Guadagnoli E, Weeks JC. Use of alternative medicine by women with early-stage breast cancer. *New England Journal of Medicine*. 1999, 340(22): 1733-1739.
  22. Owens B, Jackson M, Berndt A. Complementary therapy used by Hispanic women during treatment for breast cancer. *Journal of Holistic Nursing*. 2009, 27(3): 167-176.
  23. Rees RW, Feigel I, Vickers A, Zollman C, McGurk R et al. Prevalence of complementary therapy use by women with breast cancer: A population-based survey. *European Journal of Cancer*. 2000, 36(11): 1359-1364.
  24. Crocetti E, Crotti N, Feltrin A, Ponton P, Geddes M et al. The use of complementary therapies by breast cancer patients attending conventional treatment. *European Journal of Cancer*. 1998, 34(3): 324-328.
  25. Cui Y, Shu X, Gao Y, Wen W, Ruan ZX et al. Use of complementary and alternative medicine by Chinese women with breast cancer. *Breast Cancer Research and Treatment*. 2004, 85(3): 263-270.
  26. Shen J, Andersen R, Albert PS, Neil Wenger, John Glaspy et al. Use of complementary/alternative therapies by women with advanced-stage breast cancer. 2002.
  27. JIVA Ayurveda. *Managing Cancer with Ayurveda*.
  28. Manfred M. *The American Homeopath*. 2012, 18.
  29. Memorial Sloan-Kettering Cancer Centre. *About herbs, botanicals and other products*. 2003.
  30. Ernst E. A systemic review of systematic reviews of homeopathy. *Br J Clin Pharmacol*. 2002, 54(6): 577-582.
  31. Cucherat M, Haugh MC, Gooch M, Boissel JP. Evidence of clinical efficacy of Homeopathy. A meta-analysis of clinical trials. HMRAG. Homeopathic Medicines Research Advisory Group. *Eur J Clin Pharmacol*. 2000, 56(1): 27-33.
  32. Linde K, Clausius N, Ramirez G, Melchart D, Eitel F et al. Are the clinical effects of homeopathy placebo effects? A meta-analysis of placebo-controlled trials. *Lancet*. 1997, 350(9081): 834-843.
  33. Cancer Research UK. *Traditional Chinese Medicine*.
  34. Zhang JT. New drugs derived from medicinal plants. *Therapies*. 2002, 57(2): 137-150.
  35. Pierce JP, Faerber S, Wright FA, Rock CL, Newman V et al. A randomized trial of the effect of a plant-based dietary pattern on additional breast cancer events and survival: the Women's Healthy Eating and Living (WHEL) Study. *Control Clin Trials*. 2002, 23(6): 728-756.
  36. Rock CL. Anti-oxidant supplement use in cancer survivors and the general population. In: *Free Radicals: The Pros and Cons of Anti-oxidants*. National Institute of Health 2003.
  37. Slifman NR, Obermeyer MR, Aloï B K, Musser SM, Correll WA Jr, et al. Contamination of botanical dietary supplements by *Digitalis lanata*. *N Engl J Med*. 1998, 339(12): 806-811.
  38. Cheng B, Hung CT, Chin W. Herbal medicine and anesthesia. *Hong Kong Med J*. 2002, 8(2): 123-130.
  39. Labriola D, Livingston R. Possible interactions between dietary anti-oxidants and chemotherapy. *Oncology (Huntingt)*. 1999, 13(7): 1003-1008.
  40. Small EJ, Frohlich MW, Bok R, Shinohara K, Grossfeld G et al. Prospective trial of the herbal supplement PC-SPES in patients with progressive prostate cancer. *J Clin Oncol*. 2000, 18(21): 3595-3603.
  41. Da la Taille A, Buttyan R, Hayek O, Bagiella E, Shabsigh A et al. Herbal therapy PC-SPES: in vitro effects and evaluation of its efficacy in 69 patients with prostate cancer. *J Urol*. 2000, 164(4): 1229-1234.
  42. Oh WK, George DJ, Hackmann K, Manola J, Kantoff PW et al. Activity of the herbal combination, PC-SPES, in the treatment of patients with androgen-independent prostate cancer. *Urology*. 2001, 57(1):122-126.
  43. Da la Taille A, Buttyan R, Hayek O, Buttyan R, Bagiella E et al. Effect of a phyto-therapeutic agent, PC-SPES, on prostate cancer: a preliminary investigation on human cell lines and patients. *BJU Int*. 1999, 84(7): 845-850.
  44. Casseleth BR, Vlassov VV, Chapman, CC. Health care, medical practices and medical ethics in Russia Today. *JAMA*. 1995, 273(20):1569-1573.
  45. Pelka RB, Jaenicke C, Gruenwald J. Impulse magnetic field therapy for migraine and other headaches: a double-blind, placebo-controlled study. *Adv Ther*. 2001, 18(3):101-109.
  46. Brown CS, Ling FW, Wan JY, Pilla AA. Efficacy of static magnetic field therapy in chronic pelvic pain: a double-blind pilot study. *Am J Obstet Gynecol*. 2002, 187(6): 1581-1587.
  47. Segal NA, Toda Y, Huston J, Saeki Y, Shimizu M et al. Two configuration of magnetic fields for treating rheumatoid arthritis of the knee: a double blind clinical trial. *Arch Phys Med Rehabil*. 2001, 82(10):1453-1460.
  48. Weinstein S. The anticonvulsant effect of electrical fields.

- Curr Neurol Neurosci. 2001, 1(2):155-161.
49. Gironell A, Kulisevsky J, Lorenzo J, Barbanoj M, Pascual-Sedano B et al. Transcranial magnetic stimulation of the cerebellum in essential tremor: a controlled study. *Arch Neurol.* 2002, 59(3): 413-417.
  50. Integration of behavioral and relaxation approaches into the treatment of chronic pain and insomnia, NIH Technology. Assessment Panel on Integration of Behavioral and Relaxation Approaches in to the treatment of chronic pain and Insomnia. *Jama.* 1996, 276(4): 313-318.
  51. Sellick SM, Zaza C. Review of 5 nonpharmacologic strategies for managing cancer pain. *Cancer Prev Control.* 1998, 2(1):7-14.
  52. Bindemann S, Soukop M, Kaye SB. Randomized controlled study of relaxation training. *Eur J Cancer.* 1991, 27(2):170-174.
  53. Bridge LR, Benson P, Pietroni PC, R. G. Priest. Relaxation and imagery in the treatment of breast cancer. *BMJ.* 1998, 297(6657):1169-1172.
  54. Walker LG, Walker MB, Ogston, K, Heys SD, Ah-See AK et al. Psychological, clinical and pathological effects of relaxation training and guided imagery during primary chemotherapy. *Br J Cancer.* 1999, 80(1-2): 262-268.
  55. Adams D, Cheng F, Jou, H, Steven Aung, Yutaka Yasui et al. The safety of pediatric acupuncture: a systematic review. *Pediatrics.* S2011, 128(6): 575-87.
  56. Cancer Research U. Acupuncture.
  57. Field T, Morrow C, Valdeon C, Larson S, Kuhn C et al. Massage reduces anxiety in child and adolescent psychiatric patients. *J Am Acad Child Adolesc Psychiatry.* 1992, 31(1):125-131.
  58. Fraser J, Kerr JR. Psychophysiological effects of back massage on elderly institutionalized patients. *J Adv Nurs.* 1993, 18(2): 238-245.
  59. Wanchai A, Armer JM, Stewart BR. Complementary and Alternative Medicine use among women with breast cancer: A Systemic Review. *Clinical Journal of Oncology Nursing.* 2010, 14(4): 45-89.
  60. Boehm K, Borrelli F, Ernst E. Green tea (*Camellia sinensis*) for the prevention of cancer. *Cochrane Database of Systematic Reviews.* 2009, 3: CD005004.
  61. Cramer H, Lange S, Klose P. Can yoga improve fatigue in breast cancer patients? A systematic review. *Acta Oncologica.* 2012, 51(4): 559-560.
  62. Deng GE, Frenkel M, Cohen L. Evidence-based clinical practice guidelines for integrative oncology: complementary therapies and botanicals. *Journal of the Society for Integrative Oncology.* 2009, 7(3): 85-120.
  63. Elkins G, Fisher W, Johnson A. Mind-body therapies in integrative oncology. *Current Treatment Options in Oncology.* 2010, 11(3-4): 128-140.
  64. Ernst E. Massage therapy for cancer palliation and supportive care: a systematic review of randomised clinical trials. *Supportive Care in Cancer.* 2009, 17(4): 333-337.
  65. Ernst E, Lee MS. Acupuncture for palliative and supportive cancer care: a systematic review of systematic reviews. *Journal of Pain and Symptom Management.* 2010, 40(1): e3-5.
  66. Gaziano JM, Glynn RJ, Christen WG. Vitamins E and C in the prevention of prostate and total cancer in men: the Physicians' Health Study II randomized controlled trial. *JAMA.* 2009, 301(1): 52-62.
  67. Gaziano JM, Sesso HD, Christen WG. Multivitamins in the prevention of cancer in men: the Physicians' Health Study II randomized controlled trial. *JAMA.* 2012, 308(18): E1-E10.
  68. Ledesma D, Kumano H. Mindfulness-based stress reduction and cancer: a meta-analysis. *Psycho-Oncology.* 2009, 18(6): 571-579.
  69. Lin K-Y, Hu Y-T, Chang K-J. Effects of yoga on psychological health, quality of life, and physical health of patients with cancer: a meta-analysis. *Evidence-Based Complementary and Alternative Medicine.* 2011, 2011: 659876.
  70. Lippman SM, Klein EA, Goodman PJ. Effect of selenium and vitamin E on risk of prostate cancer and other cancers: the Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA.* 2009, 301(1): 39-51.
  71. Lu C, Lee JJ, Komaki R. Chemoradiotherapy with or without AE-941 in stage III non-small cell lung cancer: a randomized phase III trial. *Journal of the National Cancer Institute.* 2010, 102(12): 859-865.
  72. Mansky PJ, Wallerstedt DB. Complementary medicine in palliative care and cancer symptom management. *Cancer Journal.* 2006, 12(5): 425-431.
  73. Mao JJ, Palmer CS, Healy KE. Complementary and alternative medicine use among cancer survivors: a population based study. *Journal of Cancer Survivorship.* 2011, 5(1): 8-17.
  74. Milazzo S, Ernst E, Lejeune S. Laetrile treatment for cancer. *Cochrane Database of Systematic Reviews.* 2011, 11:

- CD005476.
75. Miller S, Stagl J, Wallerstedt DB. Botanicals used in complementary and alternative medicine treatment of cancer: clinical science and future perspectives. *Expert Opinion on Investigational Drugs*. 2008, 17(9): 1353-1364.
76. Myung S-K, Kim Y, Ju W. Effects of antioxidant supplements on cancer prevention: meta-analysis of randomized controlled trials. *Annals of Oncology*. 2010, 21(1): 166-179.
77. Paley CA, Johnson MI, Tashani OA. Acupuncture for cancer pain in adults. *Cochrane Database of Systematic Reviews*. 2011, 1: CD007753.
78. Pillai AK, Sharma KK, Gupta YK. Anti-emetic effect of ginger powder versus placebo as an add-on therapy in children and young adults receiving high emetogenic chemotherapy. *Pediatric Blood & Cancer*. 2011, 56(2): 234-238.
79. Ryan JL, Heckler CE, Roscoe JA. Ginger (*Zingiber officinale*) reduces acute chemotherapy-induced nausea: a URCC CCOP study of 576 patients. *Supportive Care in Cancer*. 2012, 20(7): 1479-1489.
80. Wilkinson S, Barnes K, Storey L. Massage for symptom relief in patients with cancer: systematic review. *Journal of Advanced Nursing*. 2008, 63(5): 430-439.