

Review Article

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Complementary and Alternative Medicines for Cancer

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ABSTRACT

Patients diagnosed with cancer can be cured by approximately 50%. The percentage of cancer patients who, if they receive the appropriate therapy in a timely manner, can achieve prolonged control with a good quality of life is also very high. At the same time, experience teaches that many cancer patients, with or without medical treatment, tend to adopt unconventional therapies.

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Received: June 21, 2022; **Accepted:** June 28, 2022; **Published:** July 30, 2022**Introduction**

Complementary and Alternative Medicines (MCAs) is called the set of both medical and health care systems, practices, and products that – until now – are not considered part of conventional medicine.

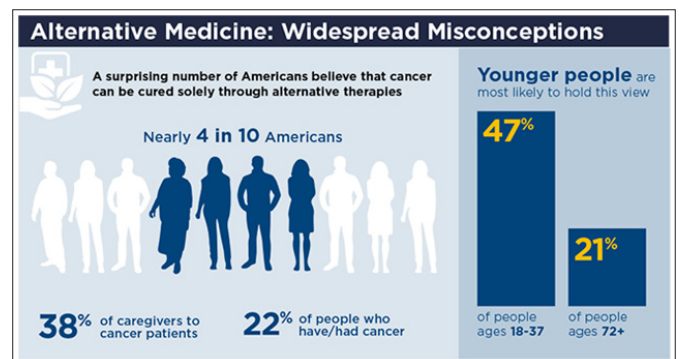
The intention of the authors is to update the information on a topic in which there is no bibliography in Spanish and to differentiate those treatments that can be accepted from totally ineffective therapies. It will also try to discriminate those practices that can complement the recovery (especially psychological) of the cancer patient from the potentially harmful ones, considering that the latter are offered both by medical professionals and by unscrupulous people who claim to propose a curative therapy when they turn patients into victims of fraud.

Almost four in 10 Americans mistakenly believe that cancer can be cured using only “alternative” therapies, such as oxygen therapy, diet, herbs, and vitamin and mineral supplements, according to a new survey by the American Society of Clinical Oncology (ASCO) [1].

Younger adults were particularly likely to hold that view. In the survey, 47 percent of people aged 18 to 37 said they thought alternative therapies alone could cure cancer versus 21 percent of people over the age of 72.

These startling findings underscore the widespread lack of scientific literacy among Americans — and the dangers that come with such ignorance. For the evidence overwhelmingly shows that alternative therapies do not cure cancer. In fact, using them in place of standard treatments can shorten the lives of cancer patients.

A Yale University study published earlier this year found, for example, that cancer patients who chose alternative medicine for their sole treatment were 2.5 times more likely to be dead five years later than patients who received standard cancer treatments, such as surgery, radiation, chemotherapy, and immunotherapy.

**ASCO 2018**

The bibliography of this heterogeneous group of supposedly medical practices is known with different nomenclatures

- Complementary and/or alternative medicines
- Unproven/unstudied therapies
- Unconventional
- Integrativas

To begin, some basic guidelines will be outlined for both the cancer patient and the doctor in charge:

- The patient should discuss the issue with their oncologist or primary care physician. If you do not take the initiative, your doctor should ask if you are receiving any MCAs. Thus, the professional will have elements to guide, investigate or help decide on how to follow harmful behaviors and prevent waste of time, money and, especially, avoid discouraging frustrations.
- Talking openly about MCAs should never take the doctor away from the patient: establishing constructive communication is the job of both parties. A good doctor-patient relationship will allow us to seek together those therapies or useful behaviors that improve the quality of life or tolerance to the situation of being sick under treatment [2].

These are some of the questions that should be asked whenever an MCA is postulated as a therapeutic alternative for an oncological patient:

- What do you offer it for?
- Does it cure cancer?
- Is it useful for any kind of tumor?
- Is it based on any medical evidence?
- Does it help to improve some symptoms or adverse effects?
- Who or who offers it?
- What demonstrable medical training do you have in the specialty? (Oncology specialists are registered with Ministries of Health, Medical Colleges and Superintendence of Health Services).
- Are your credentials known in between?
- How do you present your therapies in advertising spaces?
- Do they use patient testimonials?
- If they present scientific publications that claim to support their research, are they recognized media?
- What is the cost of these therapies?
- Are they accepted into the health system?
- Is it a widely available method or are they administered in a single center?
- Is it known how it stops tumor growth?

These questions, when answered, function as a wake-up call. Because, if the promoters of these therapies or practices do not offer satisfactory answers, it can be inferred that:

- They make no distinction between tumor type, stages, locations, etc., assuming that the disease is a symptom of an “easy to resolve” disorder.
- “Explanations” are offered in obscure jargon with the intention of impacting the patient (usually without medical knowledge) or simplistic justifications are appealed to create the illusion that such a practice “at most, will not do harm”.
- An apparent or promoted “safety” is affirmed, not irrelevant data considering that many patients postpone or abandon oncological treatments when they are informed about possible side effects.
- Treatment is presented as harmless, painless, or non-toxic, an attractive way to tempt patients since the proposal seems comparatively superior to proven treatments such as surgery, radiotherapy, or chemotherapy.
- “Therapy” is presented as the ideal agent: it serves for all tumors, at all ages and clinical stages, being able to stop the evolution and help as a support therapy in all cases.
- It is known that the treatment is only available at the center where it is prescribed, being its formula semi-secret.
- It is reported that the medication comes from another country.
- Its promoters attack colleagues who administer conventional therapies (for example, they emphasize that “they are toxic and ineffective”), while, at the same time, declaring themselves “attacked by the *establishment*” of medical science.
- To “prove” that their remedies are effective, they present testimonies of gratitude from satisfied, supposedly cured patients. In reality, these testimonies (often emotionally shocking) lack scientific value: there is no guarantee that they have been cured or that they have actually been studied and/or received a correct diagnosis. Sometimes, these patients get better precisely because they did not stop conventional treatments.
- Although they hardly acknowledge this in public, patients are told that they can (or even *should*) abandon conventional medical therapies.
- The treatment is based on an unproven theory of efficacy [3].

- A special paragraph deserves the offers of magical healing, that is, those that are not accompanied by any scientific evidence. In recent years, the English expression *disproven* (false) or *unproven* (unreal, curious inventiveness or proven false) was coined to refer to procedures or behaviors presented as true, when, in reality, they arise from the imagination of their promoters; it is often said that they “work” despite remaining “without scientific explanation”. These proposals, by definition, are unfounded and their effectiveness is highly unlikely.

Although biotechnological advances in Oncology place the specialty at the forefront of scientific knowledge in the twenty-first century, this has not meant a setback – much less a loss of popularity – for CSFs. On the contrary, in recent years there has been a growing consensus to assign them a role in multidisciplinary cancer therapy, especially among those suffering from advanced disease. In these cases, both patients and family members feel an increasing need to look for options that improve the quality of life of the patient, sometimes “at any price”. In this process, there is a certain risk that the patient will delay, neglect, or abandon an effective treatment.

New currents of medical thought have emerged for some time now, especially in the U.S., which no longer consider MCAs “covert practices” but many of them are recognized by the health care system. In both North America and Europe, MCAs mean multi-billion dollar businesses. According to a conservative estimate made in 2019, only in the U.S. this business generated a movement of 27 billion dollars. In Europe, according to a study published in 2018, CSFs are the second fastest growing industry. In many Third World countries their development is still incipient, if not marginal. But, in the light of some preliminary works, its rise should not be dismissed: in a series presented at the XII Working Days of the Argentine Association of Clinical Oncology, N. Ferro and G. Cuello analyzed 140 self-administered questionnaires to outpatient patients. The survey showed that 43.5% of patients had performed or continued to undergo treatments with some variant of CAM. In an oral survey, conducted with 250 patients in hospitals in Buenos Aires and Greater Buenos Aires, A. Slepetic et al. found that 22% of patients had had experiences with ACM [4].

According to some authors, complementary and alternative medicines seem to meet a demand not yet met by scientific medicine, possibly because health professionals are in a conceptual scheme, different from the one that was provided to them during their academic training.

These practices are called “complementary” in Europe and “alternatives” in the US. But “alternative” means that we are facing a dubious treatment, contrary to the conventional one of proven efficacy. For this reason, if MCAs constitute any obvious risk, it is to delay or even distance the patient with the opportunity to respond to therapeutic procedures and curative or control behaviors. For this reason, in the world there is a growing consensus to disguise a dietary supplement from an unvalidated or worse, harmful method. Many times, these alternative treatments are active, invasive, drugged, very expensive, counterproductive, and ineffective.

Herself estimates that between 8 and 10% of patients who receive their first diagnosis, resort to one of these therapies; then, as their disease evolves, up to 50% of all patients approach them. In a review of 26 studies involving patients from 13 countries, the incidence of CAM was 31%. The most used were:

- Dietary therapies
- Homeopathy
- Hypnotherapy
- Imagery
- Visualization
- Vitaminoterapias
- Relaxation techniques
- Spiritual healing

In both general medicine and oncology there are more cases of female patients, usually young, with high economic power and high educational level. From 1997 to date the literature mentions an increase of 67% among these CSFs. In the paediatric segment, there has also been a clear increase in the use of CAM, according to data from Australia, Finland, the Netherlands, and Canada; Between 40 and 50% of children with cancer are taken by their parents to receive some of these “therapies” and, according to other North American references, up to 81% [5].

As in Argentina, one of the reasons is the weak or no control of the registration bodies, as well as the low response capacity of the agencies in charge of the control of medicines and the practice of medicine: the social acceptance of the CSFs – little corresponded by the institutional mechanisms of regulation – greatly facilitates their chances of promoting themselves on the Internet, yellow pages, graphic, radio and television press, among others.

The media often lack adequate controls to verify the information presented to them. This superficiality in the treatment of information can be attributed to ignorance. But the sponsors of the products or methods and the journalistic companies are groups where lucrative profit prevails. Moreover, patients or their families are rarely prepared to discriminate against sources of information, especially when, in some cases, it is presented by doctors who appear to provide legitimate and trustworthy data.

It is also common that many of these proposals are not preceded by controlled studies and come to the market without having conducted research comparing groups of cancer patients who receive this new treatment with control groups that did not receive it. For these studies to be valid, both groups had to receive the same diagnosis and have the same age, distribution by sex, stage of the disease and number of patients. Finally, the evaluation allows to compare the effectiveness of the proposed therapy with the control group, without treatment. As this elementary procedure is often overlooked, from the extent of fraud and to recognize potentially useful therapies, the National Institute of Health and the National Cancer Institute of the United States, opened the National Center for Complementary and Alternative Medicine (CNMCA), the main body of the G U.S. federal government engaged in scientific research into complementary and alternative medicines. It aims to explore practices for CSFs in the context of science, train researchers in CSFs and inform the public and healthcare professionals about the results of research studies in CSFs (*). In recent years, medical academies have also included many of these therapies in their curricula, and major medical journals usually include reviews on the subject [6].

Some proposals considered by the MCA are the so-called body-mind sessions, massages, exercises, dietary supplements, group therapies, chiropractic, acupuncture, among others. Most of the professionals who offer MCA are family physicians and/or psychiatrists. In this sense, its detractors fight the laying on of

hands, the so-called therapeutic touch, Reiki, or herbal therapies of unproven efficacy.

The CNMCA divides the MCAs into seven categories:

- a) Diet and nutrition
- b) Body and mind techniques
- c) Bioelectromagnetic
- d) Alternative medical systems
- e) Pharmacological and biological therapies
- f) Manual healing methods
- g) Herbal medicine, medicine and nutrition

Diet and Nutrition

Its proponents include in this group validated knowledge about fruits, vegetables, fibers, fat restriction, which alone did not prove to stop tumor growth. Detoxification or metabolic treatments have been on the market for 50 years, and Gerson (injections of liver extracts) stand out, which is accompanied by a diet low in salt, high in potassium; those based on coffee enemas among other hygienic-dietary measures and the González method (Mexico), variant of the Gerson. Other centers in Mexico tested variants of the previous one. Ayurvedic medicine is also based on detoxification and, on the belief that substances go into putrefaction in the colon; some CAM promoters now offer the therapy of large volume enemas with various substances. No benefits are known for these CSFs. Megavitamins and orthomolecular therapy (based on large amounts of nutrients) also showed no advantage. In certain clinical trials it has been shown that vitamins in high doses can alter the action of certain drugs used in antineoplastic therapy.

Diet and macrobiotic diagnostic techniques also show no benefit. Healthy diets improve the general condition of a person, but what is being discussed here is their therapeutic efficacy, and so far, they have not been proven to modify the course of a tumor disease [7].

Body and Mind Techniques

This group of “therapies” is widely accepted in the U.S. Among the techniques that are recognized as having some advantage in improving the psycho-physical state of the patient are meditation, yoga and biofeedback, which can reduce physiological reactions to stress, relieve depression and / or help control pain. But while they can have a favorable impact on quality of life and maintaining a positive attitude can increase a patient’s chances of surviving cancer, these therapies can help the patient accept treatments of proven efficacy, as it remains to be shown that emotions directly influence the course of the disease.

Then, it is out of the question the need to provide personalized or group attention to the psychological health of cancer patients, both for patients and family.

For the same reason, although the influence of the psychological factor on the genesis of cancer has not been clearly established, its care organization is a vital part of conventional multidisciplinary therapies. Simple exercise is therapeutic in patients who require decreased muscle mass increase by antiandrogenic therapies, or improvements in bone metabolism by antiestrogenic or antiandrogenic hormone treatments.

Bioelectromagnetic

Used in Chinese medicine, it involves the interaction of living organisms with electromagnetic fields. No theoretical or clinical confirmation of its usefulness in antineoplastic therapy was found.

Alternative Medical Systems

It includes a long-standing therapies, some of Oriental origin, which over time were socially accepted and even adapted for use in the West, such as Chinese medicine (which handles a large number of therapeutic herbs, such as green tea), Ayurvedic, with patients assisted in Spa-type centers (at least in the US), although in Argentina they can be found in certain areas considered “energetic” (for example, near Cerro Uritorco, province of Córdoba). Also included in this category are acupuncture and acupuncture, which are usually indicated to relieve pain, although the result of scientific studies is negative or controversial.

Pharmacological and Biological Treatments

This is the category that has provoked the most controversy. Over the past 50 years, the list of “curative drug therapies” for cancer has been extensive. Neoplastons (Burzynski, Houston); laetrile and augmentative therapy (Burton, Bahamas); shark cartilage (“sharks do not have cancer”, is the false slogan) that, failing as an antiangiogenic, went to rheumatology; Cancell (Florida, USA) that “transformed tumor cells”; krebiozen; Tlacote water, Livingston-Wheeler, multitherapy professor Di Bella (studied by the Italian health authorities at very high cost), Revici; high doses of vitamin C; Chaparral, hydrazine sulfate, “quantum” or “photonic”, without forgetting the Argentine experiences with ophidium poisons and “ideal” therapies that are presented to the ANMAT as homeopathy, are just some of the many easy solutions (to a very difficult problem) still available on the market.

In studies presented as validation of these alleged therapies it is not uncommon to find concealment or falsification of data, poorly conducted studies, irrelevant or insignificant results, omission of cases that ended in failure and, in general, there is evidence of their null effectiveness in preventing the course of the disease.

Hand Healing Methods

This group includes palpation, manipulation, chiropractic, manual massage, etc., a diversity that demonstrates the enormous heterogeneity of the classifications, which do not distinguish between professionals and laymen, nor between useful and useless techniques. The therapeutic touch and reiki (*ki*, energy; *rei*, universal) are, in fact, techniques of laying on hands that pretend to work on the “energy fields”. Those who receive Reiki, for example, are often unaware that this form of therapy comes from a religious movement inspired by Japanese Buddhism.

This category also includes Filipino surgeons (although there were also Brazilians, English, Spaniards and even some Argentines), who claim to operate tumors with “bare hands” and “without anesthesia”. Some healers, especially Brazilians, make real cuts and extract tissues. Others, such as those who pretend that the healing of an alleged wound is instantaneous, use simple magic tricks, as illusionists specializing in paranormal frauds have shown.

Herbs with Healing Properties

Some have been in use for centuries, but the most widespread in recent years were the Essiac, in Canada, which brought together four herbs; the iscador (a derivative of mistletoe); the infusion based on the *Pau d'arco* of the Incas; and a list with different teas, laxatives, garlic, ginger, sedatives (in some Chinese patients severe toxicity was warned), licorice, emetics, ephedra, ginseng, echinacea, valerian, kava, various seeds, yohimbine, and an extensive number of variants [8].

An additional problem is that in no country is there strict regulation regarding herbs for a therapeutic purpose (processing, packaging,

dosing, control of who administers them); therefore, in the context of CSFs, it is common to find herbaceous food supplements. Thus, pharmacies that prepare master prescriptions, or centers that administer their own “medicines”, or with unofficial labels, make control very difficult for health authorities. In several publications, Cassileth supports the potential of botany, but at the same time warns of the risk that comes with buying those herbs in the form of supplements.

There is no doubt about the different training of those who offer the CSFs; in different countries of the world university careers are studied that enable the assistance of patients, with some of the CSFs that we list, especially with the aim of improving their quality of life.

But worldwide research on MCAs does not demonstrate their antitumor usefulness, being presented in second- and third-order publications, or in non-medical media. To the extent that its proponents shy away from regulated research into their therapies, they only arouse distrust about their usefulness.

Another argument aided by therapists related to MCAs are those of a conspiratorial and self-victimizing nature: the eventual criticism of the medical community makes them feel “harassed by the system”, which almost always includes the drug industry. This feeling of persecution, if mishandled by the authorities, can allow MCA promoters to gain visibility they did not have before. When the scientific community is considered “rival” (since they would be part of institutions allegedly threatened with the offer of alternative methods “more effective” than those known) the accusation crumbles by its own weight. There is no medical system indifferent to new forms of healing: its staff works actively in the cure of cancer and, if it is pointed out that there are “interests” that take precedence over health, we must not lose sight of the fact that the members of that community, or their families and friends, are also part of the society affected by the disease [9,10].

A European Survey

One of the most revealing papers published recently, “Use of Complementary and Alternative Medicine in Cancer Patients: A European Research”, explored the extent, profile, and most common practices of CAM (Complementary and Alternative Medicine) in fourteen countries (United Kingdom, Spain, Israel, Turkey, Greece, Switzerland; Sweden, Italy, Czech Republic, Denmark; Serbia, Montenegro, Belgium, and Iceland) [11].

The study, published in February 2019 by the journal of the European Society of Medical Oncology, *Annals of Oncology*, collected data through a descriptive questionnaire given to 956 patients. To carry out the work, health professionals from 15 health centers, universities and European cancer departments were summoned. The choice of the specialist who concentrated the national study was based on their interest and/or experience in the CSFs and each translated the questionnaire into the local language, applying to the ethics committee in each hospital applied to the study and data collection.

Finally, the survey estimated that a third of Europeans with cancer resort to various forms of alternative and complementary therapies: the popularity of MCAs among cancer patients reaches 35.9%, ranging from 14.8% to 73.1% depending on which country it is. The constancy in the use of MCAs ranged in periods as disparate as 27 months to 18 years. Regarding the sociodemographic characteristics of the sample, 591 patients (61.8%) corresponded to female patients, while 365 (38.2%) were male. The most frequent

diagnoses were breast cancer (30.8%), rectal colon cancer (16.1%) and lung cancer (12.1%). 74% of respondents were married.

To cite one case in detail, the consultation of 115 Spaniards from 14 hospitals shows that up to a third resort to, or have resorted to, the CSFs.

The study also identified 58 different MCAs, with medicines and herbal remedies being the most used therapies (with differences given by the most popular plants in each country) followed closely by Homeopathy, vitamins/minerals, medicinal infusions, spiritual therapies, and relaxation techniques.

The article concluded that – while CSFs are not as widespread as in the United States – they are an increasingly common practice in the European countries examined. Oncologists, the paper notes, cannot ignore this reality if they want to help their patients, educate them and be informed to avoid the appearance of possible side effects and dangerous interactions with conventional drugs.

The report revealed that, in recent years, the use of purportedly therapeutic herbs before cancer diagnosis tripled. On the other hand, the multi-variable analysis estimated that the average user of MCA corresponds to a young woman (with an average age of around 55 years) with a higher education. Special mention was given to sources that suggest or advise MCA among cancer patients. In Europe, the vast majority are friends (56%), relatives (29%) or the media (28%), with doctors or auxiliary personnel who derive the use of this class of therapies 18%. Only 10% turned to the Internet.

The survey also shows that patients with a worse prognosis (pancreas, liver and brain) use complementary and alternative medicines more frequently, unlike what was observed in previous studies where women with breast cancer were more likely. 50.7% answered that the main motivation was to “increase the body’s ability to fight cancer”, although among the benefits sought many patients highlighted improving physical (40.6%) or emotional (35.2%) well-being. Only 22.4% of the patients consulted considered that the benefits of using these therapies were significant.

On the other hand, a percentage of patients not negligible (4.4%) reported transient side effects. One of the co-authors of the European work, Paz Fernández Ortega, Coordinator of Nursing Research at the Catalan Institute of Oncology, warned that one of the remaining challenges is related to the doctor-patient interaction regarding these practices: “many patients do not inform their oncologists that they are taking this or that for fear of being told that it is nonsense”.

One way to improve the administration of proven medicines and the use of MCA is for patients to become aware that they should inform their doctors since there are not always positive interactions between them.

“Regardless of what healthcare professionals think about these therapies, it is evident that their patients are using, and will continue to use, MCAs,” the authors conclude. Both physicians and nurses, they say, “must be informed about the use of CSFs in order to properly educate patients and must broaden their understanding of the concept of medicine to work towards an integrated model of those medicines whose efficacy in community health services has been demonstrated” [12].

The authors of the paper were also concerned about the way in which governments regulate these treatments due to the lack of institutions that evaluate and monitor the quality and level of preparation of professionals who practice CSFs. “Anyone can call themselves a therapist and practice the profession” and there are no definite lines on “what kind of treatments are effective for what specific conditions.”

The wake-up call from the study released by the Annals of Oncology coincided with a directive launched by the World Health Organization (WHO). The agency, in a study released in June 2004, warned that while its products are generally harmless, they are not good for all people in all circumstances because they can often cause dangerous side effects. In 2020, in China, according to the WHO, there were 9,854 cases of adverse reactions derived from the misuse of traditional therapies and products, which doubled the records of the entire decade of the 90s, which were 4,000. The WHO survey found that in 142 countries, 99 of them responded that most of these types of products could be purchased without a prescription. Unqualified acupuncturists, herbal mixtures or food supplements administered by people without proper knowledge, and self-medication without informing doctors who follow conventional treatments were the examples mentioned [12].

Conclusions

- Most patients diagnosed with cancer, and more those with advanced active disease, will come for solutions in therapies of unproven efficacy; if they do not look for them, their relatives will, a trend that is even more accentuated in the pediatric segment.
- Doctors should always be willing to discuss MCAs with their patients. And asking your patients about their use of these therapies or products should be part of the routine.
- Advising your patients on which MCAs are compatible with their therapies or have a theoretical basis is part of the assistance.
- The sources of CAM are endless, vary regionally, include useful therapies, which can improve quality of life, and others useless or harmful.
- The latter, in general, are precisely the ones that mean the greatest expenses to patients.
- Cam promoters sometimes inform the patient that the “medication is preventive” or that it “reduces the side effects of chemo or radiotherapy treatment.” This is a statement that the sufferer tends to consider “positive information.”
- They are indicated as adjuvant, neoadjuvant, and advanced phase therapy, indiscriminately in all types of pathology and clinical situation.
- Some doctors who offer MCAs present themselves as Clinical Oncologists, and others (very rare) unfortunately are.
- Patients are often not prepared to differentiate a potentially useful CAM from one harmful to their health or simple fraud.
- The MCA business is multi-billion dollar in all first world markets.
- For the patient it is essential to find out who can really care for him in the context of an oncological treatment (National Program for Quality Assurance of Medical Care).

(*) El National Center for Complementary and Alternative Medicine (NCCAM) is part of the U.S. National Institutes of Health (NIH).

Website: <http://nccam.nih.gov/health/whatiscam/spanish.htm>

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