

## ARTICLE

# A Comprehensive Definition for Integrative Oncology

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## Abstract

**Background:** Integrative oncology, which is generally understood to refer to the use of a combination of complementary medicine therapies in conjunction with conventional cancer treatments, has been defined in different ways, but there is no widely accepted definition. We sought to develop and establish a consensus for a comprehensive definition of the field of integrative oncology.

**Methods:** We used a mixed-methods approach that included a literature analysis and a consensus procedure, including an interdisciplinary expert panel and surveys, to develop a comprehensive and acceptable definition for the term “integrative oncology.”

**Results:** The themes identified in the literature and from the expert discussion were condensed into a two-sentence definition. Survey respondents had very positive views on the draft definition, and their comments helped to shape the final version. The final definition for integrative oncology is: “Integrative oncology is a patient-centered, evidence-informed field of cancer care that utilizes mind and body practices, natural products, and/or lifestyle modifications from different traditions alongside conventional cancer treatments. Integrative oncology aims to optimize health, quality of life, and clinical outcomes across the cancer care continuum and to empower people to prevent cancer and become active participants before, during, and beyond cancer treatment.”

**Conclusions:** This short and comprehensive definition for the term integrative oncology will facilitate a better understanding and communication of this emerging field. This definition will also drive focused and cohesive effort to advance the field of integrative oncology.

Patients with cancer often use methods such as acupuncture, meditation, herbs, and dietary supplements in addition to their conventional cancer treatment. A meta-analysis of surveys showed that use of such therapies has been increasing over the last decades (1). A number of different terms have been used to encapsulate the meanings of those therapies and their integration into conventional care. For many years, complementary and alternative medicine (CAM) was the commonly used term, with “complementary” referring to therapies used in addition to

conventional cancer treatment and “alternative” referring to therapies used instead of conventional cancer treatment. However, our clinical experience has shown that most cancer patients are not looking for cancer treatment “alternatives,” but are instead interested in using additional interventions that may help improve the efficacy of conventional cancer treatments, increase their chance of survival, and/or reduce their symptom burden associated with cancer or treatments. Cancer patients are also looking for complementary approaches that

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improve their quality of life during and following treatment, sometimes long after they are cured of their cancer.

With the integration of interventions such as acupuncture, mindfulness and yoga, and lifestyle counseling into major cancer centers in North America (eg, MD Anderson and Memorial Sloan Kettering Cancer Center), the term “integrative oncology” has become increasingly used. “Integrative” better represents the process of care that is provided in centers where patients are receiving these types of interventions in addition to their conventional cancer treatments. With the establishment in 2003 of the Society of Integrative Oncology (SIO), a nonprofit multidisciplinary professional organization, the term “integrative oncology” was further legitimized and began to be widely used. However, the term “integrative” is also used in other contexts. An example is the Berlin School of Integrative Oncology at the Charité Medical School in Berlin (2), which is an initiative of the German federal and state governments that aims to educate young scientists and physicians in oncology in an interdisciplinary, translational research context. Although the term “integrative oncology” is rarely used in such an educational context, having totally different meanings for the same term can generate confusion. Adding to this complexity is the growing attention to the notion of integrated care programs in oncology, in which numerous cancer specialties (eg, medical oncology, radiation oncology, surgical oncology, genetics, plastic surgery) work together to provide comprehensive patient care (3).

Furthermore, even in settings in which the term integrative oncology has been used to refer to the combination of complementary medicine therapies with conventional cancer treatments (4), the term has been defined in many different ways (5,6). Because of this lack of consensus, it has been difficult to communicate what is meant by “integrative oncology” to oncologists and other health professionals, as well as to key stakeholders, such as patients, administrators, and health policy makers. The aim of this project was to use a systematic approach to develop a comprehensive and acceptable definition for “integrative oncology.”

## Methods

We used a mixed-methods research design, which included a scoping literature search and analysis as well as a Delphi method to reach consensus within the international integrative oncology community. To ensure that diversity in expertise was represented, the writing group consisted of members with different professional/disciplinary backgrounds (ie, medical oncology, radiation oncology, surgical oncology, nursing, patient advocacy, psychology, psycho-oncology, epidemiology, integrative medicine, health policy).

First, the literature was searched using the terms “integrative oncology” and “reviews” in PubMed and the Electronic Journal Library. From relevant articles, the integrative oncology definitions were extracted and content analyses utilized to identify the themes that emerged from those definitions. Based on these themes and additional themes suggested by the writing group, an initial definition of integrative oncology was developed.

A two-round Delphi process was then employed to further refine and gain consensus regarding the new definition. In the first round, the revised definition was distributed via an online survey (software SoSciSurvey [7]) to SIO board members as well as to a convenience sample of experts. The

experts—oncologists, integrative oncology clinicians, and/or researchers from North America, Europe, and Asia—were contacted by the SIO board members. Based on first round feedback, the definition was revised and distributed again through an online survey to the full membership of SIO, with subsequent ratings and comments used to inform the final version of the definition. Data from both surveys were analyzed using descriptive statistics. Content analysis (8) was applied to the open-ended responses to identify any themes or concepts.

## Results

### Analyses of the Literature and Development of the Initial Definition

The literature search revealed 20 papers with definitions of integrative oncology (see Table 1). Six main themes were derived from the qualitative analyses:

- evidence-based/evidence-informed/evidence-guided/using best available evidence (14 of 20);
- accompanying conventional cancer treatment (18 of 20);
- addressing outcomes such as well-being, body, and mind-spirit, as well as physical, psychological, and spiritual quality of life (seven of 20);
- focused on health and not only on medicine (three of 20);
- provided by a team of health care providers/multidisciplinary/interdisciplinary (four of 20);
- patient-centered/personalized, individualized/whole person (two of 20).

Additional thematic suggestions from the writing group were:

- type of interventions (mind-body therapies, natural products, lifestyle changes);
- beyond provision of health care (information, translation of evidence, identification of beliefs, values and preferences, empowerment).

The initial definition was 74 words long and included all the above-mentioned themes: “Integrative oncology is a patient-centered (theme 6), evidence-informed (theme 1) approach to health care (theme 4) that uses mind-body therapies, natural products, and lifestyle modification (theme 7) as adjunct to conventional cancer treatments (theme 2) and is ideally provided by a multidisciplinary team of care providers (theme 5). Integrative oncology aims to increase well-being of mind, body, and spirit (theme 3) and to provide patients with skills enabling them to help themselves during and beyond cancer treatment (theme 8).”

### Results of the Delphi Surveys

The first survey provided feedback from 28 people (79% from North America, 50% oncologists). Less than half of them (43%) practiced integrative oncology. More than two-thirds (70%) agreed that all relevant aspects of integrative oncology were included. On a 0 to 10 numeric rating scale (0 = “don’t agree at all” to 10 = “fully agree”), agreement was very high that the definition was understandable (median = 9), helped explain the meaning of integrative oncology (median = 9), and would be used by the respondents (median = 9). Open-ended responses were mainly in favor of the definition. Some comments discussed the theme of evidence and if this could be described in

Table 1. Definitions from the literature and emerging themes

| Definitions  | References | Themes*          |
|--|------------|------------------|
| Not specific to oncology   |            |                  |
| “The practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, healthcare professionals and disciplines to achieve optimal health and healing.”  | (12)       | 1<br>4<br>5<br>6 |
| Specific to oncology   |            |                  |
| “Complementary and alternative therapies are generally defined as any medical system, practice, or product that is not part of conventional medical care. Examples include natural products (i.e., vitamins, minerals, botanicals, and fish oil) and mind–body practices (i.e., yoga, meditation, acupuncture, and massage). Complementary medicine is the use of a therapy in conjunction with conventional medicine. Alternative medicine is the use of a therapy in place of conventional medicine. Integrative medicine is the use of evidence-based complementary practices in coordination with evidence-based conventional care. Integrative oncology refers to the use of complementary and integrative therapies in collaboration with conventional oncology care.” | (13)       | 1<br>2           |
| “Both integrative medicine and integrative oncology combine conventional with other medical approaches that have been shown to be safe and effective.”   | (14)       | 1<br>2           |
| “Integrative oncology combines the best practices of conventional and complementary oncological therapy, uniting them into one, holistic concept. With the awareness that the two therapeutic methods may occasionally interfere with each other, the best solution is aimed at.”  |            |                  |
| “Integrative oncology is a combination of conventional with complementary therapies that have been shown to be safe and effective.”  | (15)       | 1<br>2           |
| “Integrative oncology aims to combine the best practices of conventional and complementary oncological therapy (the ‘best of both worlds’).”   | (5)        | 1<br>2           |
| “Integrative oncology is a combination of one where complementary and alternative medicine (CAM) with conventional cancer treatment modalities is used to manage symptoms, control side effects and improve the state of mental wellbeing.”  | (16)       | 2<br>3           |
| “Integrative oncology is an evolving evidence-based specialty that uses complementary therapies in concert with medical treatment to enhance its efficacy, improve symptom control, alleviate patient distress and reduce suffering.”  | (17)       | 1<br>2<br>3      |
| “Integrative oncology, the diagnosis-specific field of integrative medicine, addresses symptom control with non-pharmacologic therapies. Known commonly as ‘complementary therapies’ these are evidence-based adjuncts to mainstream care that effectively control physical and emotional symptoms, enhance physical and emotional strength, and provide patients with skills enabling them to help themselves throughout and following mainstream cancer treatment.”  | (18)       | 1<br>2<br>3      |
| “Integrative oncology emphasizes awareness of and sensitivity to the mental, emotional, and spiritual needs of a patient, combining the best of evidence-based, complementary therapies and mainstream care in a multi-disciplinary approach to evaluate and treat the whole person.”  | (19)       | 1<br>2<br>5      |
| “Integrative oncology incorporates complementary medicine (CM) therapies in patients with cancer.”   | (20)       | 1                |
| “The emergence of the integrative oncology concept is based on three-core axis: patients motivation for CM use, to be provided within their treating oncology center, emerging evidence-based clinical research findings regarding a number of various CM interventions in improving quality-of-life (QOL)-related outcomes, and an increasing awareness among oncologists to the wide-spread use of CM by their patients, with potentially negative effects.”   |            | 2<br>3           |
| “In ‘A Patient’s Perspective on Integrative Oncology: Getting Past the ‘War,’ Living with and Beyond Cancer’ by Josh Mailman, Co-Chair of SIO’s Patient Advocacy Task Force, discusses the roles of integrative oncology and how it has helped him.”   | (21)       | 1<br>3           |
| “I discovered that integrative oncology is about understanding the whole body. ... I also learned about the growing body of evidence-based research on integrative oncology, and, as a patient, it was important for me to understand which treatments or suggestions had evidence-backed research so that I could separate them from those that had not been properly or fully studied.”  |            |                  |
| “My journey into integrative oncology helped me in many ways; first in finding peace with my diagnosis; second removing many stress points from my life; and third by helping me manage my fatigue after my conventional treatment. Integrative oncology has helped me live with a cancer that cannot be cured, but can be treated as a chronic disease.”  |            |                  |
| “Integrative oncology refers to the study and use of complementary modalities that are not traditionally part of modern Western medical practices but can be used as adjuncts to mainstream medicine to control the symptoms associated with cancer and cancer treatment. Unfortunately, the term has been paired with ‘alternative medicine’ to form the acronym CAM (for complementary and alternative medicine), thus blurring the critical distinctions between the two.”  | (22)       | 2                |
| “Integrative oncology is the term being increasingly adopted to embrace complementary and alternative medicine (CAM), but integrated with conventional cancer treatment as opposed to being considered a rival or true ‘alternative.’”   | (23)       | 2                |

(continued)

Table 1. (continued)

| Definitions  | References | Themes*                    |
|--|------------|----------------------------|
| “Integrative oncology utilizes techniques for self-empowerment, individual responsibility, and lifestyle changes that could potentially reduce both cancer recurrence and second primary tumors. Integrative oncology is both a science and a philosophy that focuses on the complexity of health of cancer patients and proposes a multitude of approaches to accompany conventional therapies to facilitate health.”   | (6)        | 2<br>4                     |
| “In the United States, the term ‘integrative oncology’ may be variably defined, but most definitions would include the idea and practice of adding complementary and alternative medicine (CAM) approaches to the range of therapeutic options provided to cancer patients in previously strictly conventional medical environments.”  | (4)        | 2                          |
| “Integrative Oncology, the synthesis of mainstream cancer treatment and effective complementary therapies, expands a long tradition of supportive care in oncology. The profound public and cancer patients interest in complementary modalities arose in the context of new emphases on quality of life in oncology research and treatment, patients’ desire to play a role in regaining and maintaining their health, imperfect mainstream interventions for symptom relief, the attraction to the individualized comfort of complementary therapies in increasingly brief and impersonal medical care, in addition to doubtless many other trends.” | (24)       | 1<br>2<br>3<br>4<br>5<br>6 |
| “Integrative oncology is not about specific mainstream or non-conventional treatment modalities but is an approach to treating patients. It is an approach that addresses patients’ concerns using a rational risk/benefit evaluation. It is the ability to integrate the best of complementary and mainstream care using a multidisciplinary approach, combining the best of mainstream cancer care and rational, data-based, adjunctive complementary therapies.”  | (25)       | 2<br>5                     |
| “Integrative oncology, a combination of the best of mainstream cancer care and rational, data-based, adjunctive complementary therapies.”  | (26)       | 1<br>2                     |
| One definition of “integrative oncology” describes the emerging field as “comprehensive, evidence-based approach to cancer care that address all participants at all levels of their being and experience.” This definition adapts current notions of “integrative medicine”—the judicious integration of CAM and conventional therapies in the best interest of patient—to oncology, with emphasis on aspects of patient care including attention to “body, mind, soul and spirit within the self, and within the specific culture and the natural world.”  | (27)       | 1<br>2<br>3                |
| Integrative oncology is “the next step in the evolution of cancer care [including] the use of evidence based-tools [that] have their origin both in Western, conventional medicine and in complementary and alternative medicine (CAM) traditions.”  | (28)       | 1<br>2                     |

\*Themes: 1 = evidence-based/evidence-informed/evidence-guided/using best available evidence; 2 = accompanying conventional cancer treatment; 3 = addressing outcomes such as well-being, body, mind spirit, physical, psychological and spiritual quality of life; 4 = focuses on health and not only medicine; 5 = provided by a team of care providers/multidisciplinary/interdisciplinary; 6 = patient-centered/personalized/individualized/whole person.

more detail. Other comments asked for inclusion of specific types of therapies, such as Chinese medicine. It was decided that the concept of evidence-informed captured a broad range of evidence, from case reports to randomized, placebo controlled trials, and reflected patients’ values and beliefs, which are privileged in integrative oncology. In addition, traditional healing systems such as Chinese medicine were already represented through the inclusion of specific types of therapies (eg, Chinese herbal medicine = natural products, qigong = mind-body therapy). However, the phrase “from different traditions” was included to reflect cultural and regional diversity. Furthermore, the phrase “is ideally provided by a multidisciplinary team of care providers” was deleted because several respondents commented that cancer treatment is now provided by an interdisciplinary team and that this addition would be redundant. Integrative oncology would just mean an expansion of this team to include further types of expertise.

This resulted in a revised version of the definition that took into account seven of the previously identified themes: “Integrative oncology is a patient-centered, evidence-informed approach to health care that utilizes mind-body therapies, natural products, and lifestyle modifications from different traditions alongside conventional cancer treatments. Integrative oncology aims to optimize health, quality of life, and clinical outcomes and to empower people to become active participants in their care during and beyond cancer treatment.”

The definition was sent to all SIO members as a second online survey. An invitation to participate was sent to a total of

434 members, and 85 (19.6%) took part in the survey. Three-quarters of the respondents were from North America, and the majority (83%) declared that they practiced integrative oncology. More than 40% of respondents were medical doctors, with the remaining 59% representing general integrative medicine practice, research, nursing, or other areas connected with integrative oncology. Overall, the feedback was very positive, with respondents giving the highest possible agreement rating (median = 10) regarding using the definition in the future and very high agreement ratings regarding understanding the definition (median = 9) and being helpful in explaining what integrative oncology means (median = 9). There were no relevant differences between the assessments by respondents with different professional backgrounds or coming from different continents. Two-thirds of the respondents (65%) believed that the definition included all relevant aspects. Missing aspects were mentioned by 30%, and open-ended questions were provided by 39% of respondents (see Table 2).

Overall, the comments on the second Delphi survey were positive, but the suggestions were quite heterogeneous. Two-thirds of suggestions focused on what were perceived to be missing interventions, and it became clear that therapies such as acupuncture and massage were not well represented in the definition. As a consequence, the definition was revised using the umbrella term “mind and body practices,” which is used by the National Center for Complementary and Integrative Health in the United States. This term includes mind-based techniques such as meditation and hypnosis, as well as manual techniques

Table 2. Second round of the Delphi process

| Survey items  | All (n = 85)   | North America (n = 64) | Europe (n = 13) | Other region (n = 8) | Medical doctors (n = 35) | Other profession* (n = 47) |
|---|----------------|------------------------|-----------------|----------------------|--------------------------|----------------------------|
| It is understandable, mean (SD)/median  | 8.9 (1.5)/9.0  | 8.8 (1.7)/9.0          | 9.2 (1.1)/10.0  | 9.1 (1.0)/9.0        | 9.2 (1.1)/10.0           | 8.7 (1.8)/9.0              |
| It helps me to understand what is meant by integrative oncology, mean (SD)/median | 8.9 (1.5)/9.0  | 8.9 (1.4)/9.0          | 8.9 (1.5)/9.0   | 8.5 (1.6)/9.0        | 9.2 (1.0)/10.0           | 8.6 (1.7)/9.0              |
| I would use it, mean (SD)/median  | 8.7 (1.9)/10.0 | 8.8 (1.9)/10.0         | 8.5 (2.0)/9.0   | 8.4 (1.8)/9.0        | 8.9 (1.6)/10.0           | 8.6 (2.0)/9.0              |
| Yes, it includes all relevant aspects, No. (%)                                    | 55 (64.7)      | 42 (65.6)              | 7 (53.8)        | 6 (75.0)             | 23 (65.7)                | 30 (63.8)                  |
| Thought that aspects were missing, No. (%)  | 25 (29.4)      | 18 (28.1)              | 5 (38.5)        | 2 (25.0)             | 9 (25.7)                 | 16 (34.0)                  |
| Provided additional comments, No. (%)   | 33 (38.8)      | 27 (42.2)              | 5 (38.5)        | 1 (12.5)             | 14 (40.0)                | 19 (40.4)                  |

\*Integrative oncology practitioner, nurse, student, and others.

Integrative oncology is a patient-centered, evidence-informed field of cancer care that utilizes mind and body practices, natural products, and/or lifestyle modifications from different traditions alongside conventional cancer treatments. Integrative oncology aims to optimize health, quality of life, and clinical outcomes across the cancer care continuum, and to empower people to prevent cancer and become active participants before, during, and beyond cancer treatment.

Figure 1. Final version of the definition for integrative oncology.

such as acupuncture and massage (9). One respondent mentioned that “health care” encompassed a broader area than integrative oncology, and the decision was made to be more focused and to use the term “cancer care” in the revised version. Another respondent also suggested that the phrase “approach to cancer care” could be misleading and not specific enough as a field of care or medical specialty. Integrative oncology is more than just an approach to overall cancer care; it has been the focus of a professional organization for more than 10 years and is an established field in its own right. During the review process, it was noted that cancer prevention was not included in the definition. Because the ultimate goal of many integrative oncology behaviors is cancer prevention and control, the definition was modified to include prevention.

Taking those aspects into account, we developed the final version of the definition, which is 62 words and takes seven themes into account (see Figure 1).

## Discussion

Based on a systematic consensus approach, the interdisciplinary writing group developed a comprehensive definition for the term integrative oncology. Our approach had the advantage of combining the knowledge from previous published definitions with current expert opinion from professionals active in the field. This stepwise process allowed the writing group to shape the definition in a way that was acceptable for different stakeholder groups and encompassed the most relevant aspects to create a concise and comprehensive definition.

The most difficult part in creating a concise definition was the categorization of the interventions. The majority of the comments from both Delphi surveys and within the writing team focused on which terms to use to capture diversity in treatment modalities. Because complementary medicine covers such a broad range of interventions, it is impractical to name all of them or even to name the most common interventions. Several comments suggested we list Chinese medicine as one category. Following this suggestion would have necessitated listing other traditional medical systems such as Ayurveda, resulting in an unwieldy and long definition. We found a

compromise by using the term “mind and body practices,” which has been implemented by the National Center for Complementary and Integrative Health (9). This term tries to cover a broad range of methods, including manual therapies such as acupuncture, massage, and chiropractic, as well as other therapies that work more on the mind level such as hypnosis and relaxation techniques. Taking the example of Chinese medicine, all components are covered by the following definition: acupuncture as body therapy, qigong as both mind and body therapy, herbs as natural products, and dietary advice as lifestyle modification. Nevertheless, for some practitioners and patients it might still be difficult to put the interventions they practice or receive into one of the more abstract intervention categories used in the definition.

In the previous definitions, integrative oncology was described as an “approach,” a “field,” a “specialty,” or a “discipline.” We believe that it is too early to call it a specialty because the competencies are currently under development. Based on this, we decided that “field” would be the most suitable term within the current context. Another aspect that the writing group discussed and that was commented on in the Delphi surveys was that integrative oncology is ideally provided by a multidisciplinary team of care providers. This has also been mentioned in four of the previously published definitions. Taking into account that the whole field of cancer care has moved toward an interdisciplinary approach over the last decade, we opted to delete this part of the definition. Integrative oncology represents an additional aspect in the overall interdisciplinary approach to cancer care. Furthermore, there are oncologists who practice integrative oncology independently (eg, oncology and Chinese medicine in China or oncology and naturopathy in Germany) that did not fit well this definition of an interdisciplinary approach.

Treatment modalities used in integrative oncology are typically an out-of-pocket expense in many parts of the world. When added alongside conventional care treatments, these modalities are typically used by the more affluent segment of our society and, as such, practiced more often in higher-income countries where both conventional cancer treatments and complementary medicine treatments are available and can be combined. In low-income countries, such as Africa, natural products

or other traditional interventions might be used as an alternative to conventional cancer treatment because conventional treatments are not available or affordable (10,11). The definition might be less applicable in those countries.

Further limitations of our approach include a relatively small sample size in the surveys and that the writing group and the members of SIO mainly represented North America and Europe. Nevertheless, the feedback we received from the respondents was quite homogeneous, although we could not be sure whether those who did not respond have similar opinions. Oncologists from Asia were included in both surveys, but they were a minority. Furthermore, we had no representatives from Africa. In addition, our survey only targeted SIO members and did not include other stakeholder groups. However, the writing group and the members of SIO came from various backgrounds.

## Conclusion

It is important to note that not everything that is labeled integrative oncology belongs to this field. There are still instances (or cases) in which vulnerable cancer patients are offered methods that are dangerous or have no scientific evidence yet have high out-of-pocket costs. In integrative oncology, the scientific evidence, mentioned in the definition as “evidence-informed,” has a major role. By using an international and multidisciplinary development process, this short and comprehensive definition for the term “integrative oncology” will facilitate better understanding of and communication in this emerging field. Further, defining the term integrative oncology will allow for a focused and cohesive effort to advance research, practice, and education to benefit millions of cancer patients and survivors around the globe.

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