

Basic Characteristics, Status, and Challenges of Integrative Oncology in China

Integrative Cancer Therapies
Volume 20: 1–6
© The Author(s) 2021
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/15347354211063504
journals.sagepub.com/home/ict



Geliang Yang, MD, PhD^{1*}, Huiqing Zhang, MD, PhD^{2*},
Yun Xu, MD, PhD³, Aiguang Zhao, MD, PhD⁴, Peng Shu, MD, PhD⁵,
Wei Wang, MD, PhD⁶, Haibo Zhang, MD, PhD⁷, Tingting Wang, MD, PhD⁸,
and Yufei Yang, MD, PhD⁹

Abstract

Integrative oncology has developed for about 20 years in some countries; however, integrative oncology is still a relative new term for most China's oncologists. Thus, it is essential to summarize the experience and expertise, share details of differing existing models and discuss future perspectives to help define and guide practice in integrative oncology in China. This study presents a summary of the basic characteristics, status, and challenges of integrative oncology in China, and also reports on China's integrative physicians' service delivery, clinical practice and research patterns of integrative oncology by an online national survey, including 405 oncologists. It is easy for cancer patients to access to integrative therapies in China. Public funding is sufficient for integrative oncology in China, and services are often provided through general hospitals and academic hospitals. Most (95.3%) of oncologists showed a positive attitude toward the development of integrative oncology. More than half (55.6%) of the oncologists worried about the influence on integrative oncology of COVID-19, especially for routine treatment, follow-up and holding seminars. We found that integrative oncology in China has swiftly developed in recent years. However, we suggest that standard diagnosis and treatment patterns and national professional guidelines should be set up as soon as possible.

Keywords

integrative oncology, complementary medicine, cancer treatment, oncologist, China

Submitted September 12, 2021; revised November 8, 2021; accepted November 12, 2021

Introduction

According to the estimates of GLOBOCAN 2020, a total of 19.3 million new cancer cases and almost 10.0 million deaths occurred in 2020 worldwide, while 3.9 million new cancer cases and 2.3 million deaths occurred in 2015 in China by the latest national statistics.^{1,2} Huge morbidity and mortality requires a holistic approach to cancer care, including conventional cancer treatment and complementary and alternative medicine (CAM).³ Interest in the use of CAM has grown rapidly in the past 20 years, with 33.3% of US cancer patients using CAM in the past 12 months from the National Health Interview Survey and 40.0% using CAM treatments in China from a national survey.^{4,5} CAM refers to a group of diverse medical and healthcare interventions, practices, products, or disciplines that are not generally considered as part of conventional medicine, but clearly, the

boundaries between CAM and conventional medicine are not absolute.⁶

However, as most cancer patients are not looking for cancer treatment “alternatives,” they show more interest in using additional interventions combined with conventional interventions that may help prolong survival time, improve quality of life, and reduce symptoms burden associated with cancer or treatments. Different from CAM, with the integration of evidence-based interventions such as acupuncture, Tai Chi, mindfulness and yoga, and lifestyle counseling into major cancer centers in US, the term “integrative oncology” has become increasingly used. Here, “integrative” better represents the process of care combining those evidence-based complementary interventions with conventional cancer treatments.⁷ With the establishment of the Society of Integrative Oncology (SIO) in 2003, a nonprofit multidisciplinary professional organization, the term “integrative



oncology” was further legitimized and began to be widely used.⁷

With a standardized system of theories, diagnostics and therapies, traditional Chinese medicine (TCM) has been widely used for cancer treatment for a long period of time.^{8,9} In China, CAM is largely dominated by TCM, as one study on use of and attitudes toward TCM reported that 83.5% of cancer patients used TCM in a large cancer center.¹⁰ Among the three terms in cancer treatment, TCM, CAM and integrative oncology, CAM contains TCM and integrative oncology; TCM mainly comprises the therapies of herbal medicine, Chinese patented medicine, acupuncture, massage, diet therapy, and other folk medicine; while integrative oncology emphasizes the combination of evidence-based complementary therapies with conventional cancer treatments. Actually, China’s oncologists and cancer patients are usually familiar with the term “integrated Chinese and Western medicine,” instead of “integrative oncology.” Integrative oncology is gradually getting established in China through the foundation of Chinese Society for Integrative Oncology (CSIO) in Nov, 2020. Thus, the epidemiology of integrative oncology in China still remains unclear, and the usage of integrative oncology might be less than that of CAM.

In China, Chinese herbal medicine was the most commonly used integrative therapy, followed by Chinese patented medicine, dietary therapy, and acupuncture.^{5,11} The main expectations that cancer patients seek for integrative oncology are to improve the immune system and alleviate symptoms.¹¹

Integrative Oncology Service Availability and Delivery

The implementation of integrative oncology in routine cancer care continues to evolve and develop in China. It is quite

easy for cancer patients to access to integrative therapies in general/academic hospitals or TCM-specialized hospitals in metropolitan areas and provincial capitals. Different from the US and European countries, integrative oncology is often delivered in an integrated way with other cancer conventional interventions. In many large general hospitals, academic hospitals or comprehensive cancer centers, the common pattern of integrative oncology consultation is multi-disciplinary treatment, and an integrative care plan is then developed and proposed to the principal treating physician, who is usually a TCM or medical oncologist.

Funding Supports

As China’s government continues to increase the funding of public health, especially for cancer treatment and TCM, public funding is quite enough for integrative oncology in China, and services are often provided through general hospitals and academic hospitals. The cost to cancer patients for integrative therapies is relatively low, and can be mostly covered by reimbursement systems, and the burden of them is acceptable on the whole. Meanwhile, the system of private health insurance is gradually developing, which could cover packages of some supportive care for some cancer patients.

Guideline and Evidence Base

To our best knowledge, there is still no professional guideline about integrative oncology in China. The majority of China’s physicians of integrative oncology might fail to learn that there are international professional guidelines in this field. Some guidelines with recommendations on the use of integrative therapy in cancer care are simple, and only available in the context of specific cancers, for example, stomach and liver cancers.

¹Department of Medicine, Shanghai Clinical Research Center, Shanghai, China

²Department of Traditional Chinese Medicine, Changhai Hospital, Naval Medical University, Shanghai, China

³Department of Oncology, Xiyuan Hospital of China Academy of Chinese Medical Sciences, Beijing, China

⁴Department of Oncology, Longhua Hospital Affiliated to Shanghai University of Traditional Chinese Medicine, Shanghai, China

⁵Department of Oncology, Affiliated Hospital of Nanjing University of Chinese Medicine, Nanjing, China

⁶Chongqing University Cancer Hospital, Chongqing, China

⁷Department of Oncology, Guangdong Provincial Hospital of Traditional Chinese Medicine, Guangzhou, China

⁸The State Key Laboratory of Pharmaceutical Biotechnology, Division of Immunology, Medical School, Nanjing University, Nanjing, China

⁹Department of Oncology Diagnosis and Treatment, Xiyuan Hospital of China Academy of Chinese Medical Sciences, Beijing, China

*These authors contributed equally to this work.

Corresponding Authors:

Yufei Yang, Department of Oncology Diagnosis and Treatment, Xiyuan Hospital of China Academy of Chinese Medical Sciences, Beijing, 100091, China.
Email: yyf93@vip.sina.com

Tingting Wang, The State Key Laboratory of Pharmaceutical Biotechnology, Division of Immunology, Medical School, Nanjing University, Nanjing, Jiangsu, 210093, China.
Email: wangtt@nju.edu.cn

Haibo Zhang, Department of Oncology, Guangdong Provincial Hospital of Traditional Chinese Medicine, Guangzhou, 510120, China.
Email: haibozh@gzucm.edu.cn

Another major difficulty faced by China's integrative physicians is the lack of high-quality research to inform and perhaps positively influence greater acceptance by the wider medical community. A 10-year literature analysis also indicated that top medical journals rarely published CAM randomized controlled trials (RCTs) of oncology. The reasons for few publications and citations of CAM clinical studies in oncology may be due to the relatively nonstandard design, ignorance of sample size calculation and poor follow-up work.^{12,13} In addition, many complementary and integrative medicine studies focused on the herbal medicine, manipulative and body-based therapies or mind-body therapies, for which it is difficult to design double-blind positive-control or placebo-control RCTs, while it is also a huge challenge to confirm the benefit of specific elements of integrative oncology care usually combined with conventional treatments. Another important reason may be attributed to the theory of TCM, which emphasizes individualized prescription of herbs.

Well-designed real world studies with reliable data such as pragmatic controlled studies, umbrella or basket trials could be a better approach to evaluate the benefit of integrative therapies; likewise, whole systems research methods including model validity may help build the evidence base as well.

A National Cross-Sectional Online Survey

A national online cross-sectional survey was conducted between August and September 2021 on one free online platform named Tencent Survey, based upon a similar survey.³ Prior to the commencement of the survey, it was distributed to a group of experienced oncologists for review, and sent to the integrative physicians of CSIO and their colleagues who were oncologists. Considering this survey was online, open and anonymous to the physicians of CSIO, it could be legally exempt from ethical review after consultation by the ethics committee of the authors.

Descriptive statistics (frequency distribution, mean \pm standard deviation (SD)) were used to summarize the oncologists' characteristics and outcome variables. All analyses were performed using SAS software (version 9.4, SAS Institute, Cary, NC, USA).

The survey was divided into two parts, one for demographics, the other about the clinical practice, training, research, and development of integrative oncology. In the last question of the demographic information, oncologists were asked whether they had ever been aware of integrative oncology. If oncologists chose "Yes," they would be asked to complete the rest of the survey. If chose "No," they would be asked to end the survey and state their desire to learn about integrative oncology in future.

In total, 854 participants responded the online survey, 449 (52.6%) failed to complete the survey, and 405

Table 1. Characteristics of Survey Respondents (n = 405).

Characteristics	Mean \pm SD	No. (%)
Age (year)	38.0 \pm 8.3	
Sex		
Male		199 (49.1)
Female		206 (50.9)
Region		
Metropolitan areas		158 (39.0)
Provincial capitals		45 (11.1)
Other cities		202 (49.9)
Practice setting		
Academic hospital		215 (53.1)
General hospital		147 (36.3)
Private hospital		15 (3.7)
Community hospital		5 (1.2)
Other		23 (5.7)
Specialty		
TCM oncologist		135 (33.3)
Medical oncologist		120 (29.6)
Surgical oncologist		25 (6.2)
Integrative oncologist		24 (5.9)
Rehabilitation oncologist		18 (4.4)
Psychotherapist/psychiatrist		6 (1.5)
Radiologist		3 (0.7)
Hematologist		2 (0.5)
Other		72 (17.8)
Working duration (years)	12.3 \pm 9.2	

Abbreviations: SD, standard deviation; TCM, traditional Chinese medicine.

oncologists were considered valid for final analysis (response rate: 47.4%). The survey covered the 29 provinces in China, and 214 participants were identified as integrative physicians. For nearly half of the oncologists (47.2%, 191/405) who failed to have awareness of integrative oncology, 91.1% were willing to learn more about integrative oncology. Demographic information is provided in Table 1, and the clinical practice, training, and research of integrative oncology is in Tables 2 to 4. Among the 37 oncologists who knew of recommendations/institutional guidelines to support integrative oncology, 25 chose domestic recommendations/ institutional guideline while 25 chose international ones. The majority of the oncologists (97.3%, 36/37) referred to recommendations/institutional guideline before they made clinical decisions.

Nearly all (95.3%) of the oncologists showed a positive attitude toward the development of integrative oncology, and felt more attention should be paid to building the standard diagnosis and treatment pattern, national professional guidelines and strengthening the training of integrative physicians. More than half (55.6%) of the oncologists worried about the influence on integrative oncology of COVID-19, especially for routine treatment, follow-up and holding seminars.

Table 2. Oncologists' Clinical Practice Regarding Integrative Oncology (n = 214).

Questions	No. (%)
Common delivery model	
Multi-discipline treatment	165 (77.1)
Parallel	49 (22.9)
Integrated	92 (43.0)
Other	10 (4.7)
Not clear	8 (3.7)
Recommendations/ institutional guideline to support integrative oncology	
Know	37 (17.3)
Not know	83 (38.8)
Not clear	94 (43.9)
Service delivery	
Physician-led	178 (83.2)
Other discipline physician-led	21 (9.8)
Not clear	15 (7.0)
Dedicated integrated therapy center in oncologist's hospital	
Yes	49 (22.9)
No	153 (71.5)
Not clear	12 (5.6)
Patient reimbursement for integrative therapies	
All covered	13 (6.1)
Most covered	71 (33.2)
Half covered	10 (4.7)
Part covered (<50%)	42 (19.6)
Not covered	9 (4.2)
Not clear	69 (32.2)

Discussion

Integrative oncology is still a relatively new term for most of China's oncologists. Many oncologists may get confused about the definition and relationship of TCM, CAM, and integrative oncology. Actually, the boundaries among the three terms are not very clear and absolute. According to the above survey, among the 405 oncologists, the awareness rate of integrative oncology is about 50%. With the development of this discipline and the founding of the CSIO, integrative oncology will be more popular to the cancer community in China.

In view of the increasing morbidity and mortality of cancer in China, cancer patients' expectations have shifted from principally survival to a broader concern for quality of life during and after conventional and curative cancer treatment. Awareness of the availability and benefits of integrative oncology would be further improved with the funding and developing of the integrative oncology discipline in China, as 95.3% of the oncologists showed a positive attitude toward its development.

Currently, integrative oncology in China still faces some huge challenges, for example, setting up the standard diagnosis and treatment pattern, writing national professional guidelines, developing integrative physicians and increasing

Table 3. Oncologists' Training and Research Regarding Integrative Oncology (n = 214).

Questions	No. (%)
Type of academic training	
Seminar/lecture	142 (66.4)
Training by professional committee	124 (57.9)
Internal training by hospital	49 (22.9)
Postgraduate	46 (21.5)
None	4 (1.9)
Not clear	42 (19.6)
Conduct relative research in integrative oncology	
In the past	37 (17.3)
Ongoing	39 (18.2)
Planned in the future	32 (15.0)
Never	115 (53.7)
Participating in specific organizations, networks, scientific societies about integrative oncology	
Yes	119 (55.6)
No	91 (42.5)
Not clear	4 (1.9)
Collaboration with other international organizations or networks	
Yes	73 (34.1)
No	107 (50.0)
Not clear	34 (15.9)

the funding of research. As the survey above mentioned, more than two-fifth of the integrative physicians had experience relative to research (mainly including the interventions listed in Table 4) in integrative oncology while they also showed much interest in different aspects of integrative oncology research. In order to deal with such challenges, with exception of the support by the government, professional committees of integrative oncology play a key role to organize more integrative physicians to work together, including more multi-disciplinary teams such as pharmacists and comorbidity-physicians, and to enhance communications with other countries' professional committees such as SIO. Additionally, the pattern of integrative oncology in China should shift from cancer-oriented to cancer patient-oriented. Regarding specific details, integrative physicians would be encouraged to pay more attention to the advances in and unique toxicity of immunotherapy such as PD-1/PD-L1 and CAR-T therapies, and explore the combination of integrative therapy with immunotherapy to increase the efficacy and decrease the toxicity.

However, the epidemic spread of COVID-19 has had a great influence on the clinical practice of oncologists, especially for integrative cancer therapy due to the close-contact interventions and the frequent follow-up.¹⁴ More than half of the oncologists worried about the influence of integrative oncology by COVID-19, mainly including routine treatment, follow-up and holding seminars. To better

Table 4. The Most Frequently Used/Requested Therapies and Interest in Research Regarding the Integrative Oncology Areas in China (n=214).

Integrative therapy	Most frequently used therapies, No. (%)	Most frequently requested therapies, No. (%)	Already completed research, No. (%)*	Potential interest in future research, No. (%)
Chinese herbal medicine	170 (79.4)	180 (84.1)	78 (78.8)	163 (76.2)
Chinese patented medicine	126 (58.9)	127 (59.3)	43 (43.4)	92 (43.0)
Psychological support	119 (55.9)	173 (80.8)	35 (35.4)	117 (54.7)
Acupuncture	103 (48.1)	129 (60.3)	43 (43.4)	117 (54.7)
Nutritional therapy	102 (47.9)	154 (72.0)	24 (24.2)	83 (38.8)
Diet therapy	97 (45.3)	129 (60.3)	21 (21.2)	72 (33.6)
Mind and body therapy	79 (36.9)	126 (58.9)	26 (26.3)	75 (35.0)
Physical therapy	77 (36.0)	138 (64.5)	18 (18.2)	77 (36.0)
Music therapy	45 (21.0)	79 (36.9)	21 (21.2)	52 (24.3)
Massage	43 (20.1)	82 (38.3)	14 (14.1)	39 (18.2)
Supplement	14 (6.5)	36 (16.8)	3 (3.0)	11 (5.1)
Others	6 (2.8)	1 (0.5)	1 (1.0)	5 (2.4)

*In total, 99 oncologists indicated that they have already completed research regarding integrative oncology.

manage these problems, online medical services should be widely implemented in the future, such as online outpatient visits, follow-up and seminars.¹⁵

The survey has some limitations. First, we faced challenges to make a clear definition of oncologists due to the fact that many hospitals in China do not clearly specify the duties for integrative cancer treatment. Next, the findings may not be representative of all the integrative physicians in China as the survey was conducted online by CSIO, and the sample size was not large.

Conclusion

This is the first study to summarize the basic characteristics, status and challenges of integrative oncology in China, and report on China's integrative physicians' service delivery, clinical practice and research patterns of integrative oncology by an online national survey. We found that integrative oncology in China has swiftly developed in recent years. However, we suggest that standard diagnosis and treatment patterns and national professional guidelines should be set up as soon as possible.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was partly funded by the National Key Research and Development Program of China (No. 2017YFC1700604).

ORCID iDs

Geliang Yang  <https://orcid.org/0000-0002-3878-2066>

Yun Xu  <https://orcid.org/0000-0003-4390-976X>

References

1. Sung H, Ferlay J, Siegel RL, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2021;71:209-249.
2. Zhang S, Sun K, Zheng R, et al. Cancer incidence and mortality in China, 2015. *J Natl Cancer Center.* 2021;1:2-11.
3. Toledano A, Rao S, Frenkel M, et al. Integrative oncology: an international perspective from six countries. *Integr Cancer Ther.* 2021;20:15347354211004730.
4. Sanford NN, Sher DJ, Ahn C, Aizer AA, Mahal BA. Prevalence and nondisclosure of complementary and alternative medicine use in patients with cancer and cancer survivors in the United States. *JAMA Oncol.* 2019;5:735-737.
5. Yang G, Lee R, Zhang H, Gu W, Yang P, Ling C. National survey of China's oncologists' knowledge, attitudes, and clinical practice patterns on complementary and alternative medicine. *Oncotarget.* 2017;8:13440-13449.
6. Ernst E. Exploring the science of complementary and alternative medicine: third strategic plan, 2011-2015. *Focus Altern Compl Ther.* 2012;17:e7-e7.
7. Witt CM, Balneaves LG, Cardoso MJ, et al. A comprehensive definition for integrative oncology. *J Natl Cancer Inst Monographs.* 2017;2017(52):lgx012.
8. Ling CQ, Wang LN, Wang Y, et al. The roles of traditional Chinese medicine in gene therapy. *J Integr Med.* 2014;12:67-75.
9. Ji Q, Luo YQ, Wang WH, Liu X, Li Q, Su SB. Research advances in traditional Chinese medicine syndromes in cancer patients. *J Integr Med.* 2016;14:12-21.

10. McQuade JL, Meng Z, Chen Z, et al. Utilization of and attitudes towards traditional Chinese medicine therapies in a Chinese cancer hospital: a survey of patients and physicians. *Evid Based Complement Alternat Med.* 2012; 2012:504507.
11. Yang G, Zhang H, Gan Z, Fan Y, Gu W, Ling C. Discrepant views of oncologists and cancer patients on complementary and alternative medicine in a Chinese General Hospital. *Integr Cancer Ther.* 2018;17:451-457.
12. Zhang H, Yang G, Zhang W, Gu W, Su Y, Ling C. Characteristic analysis of complementary and alternative medicine in randomized controlled trials of oncology: a comparison of published studies. *Integr Cancer Ther.* 2018; 17:551-557.
13. Yang G, Zhang W, Zhang H. Response to “characteristic analysis of complementary and alternative medicine in randomized controlled trials of oncology: a comparison of published studies”. *Integr Cancer Ther.* 2019;18:1534735419851867.
14. Yang G, Zhang H, Yang Y. Challenges and countermeasures of integrative cancer therapy in the epidemic of COVID-19. *Integr Cancer Ther.* 2020;19:1534735420912811.
15. Bashshur RL, Doarn CR, Frenk JM, Kvedar JC, Shannon GW, Woolliscroft JO. Beyond the COVID pandemic, telemedicine, and health care. *Telemed J E Health.* 2020;26:1310-1313.