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# A Survey on the Prescribing Orientation Towards Complementary Therapies Among Oncologists in Italy: Symptoms and Unmet Patient Needs

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## Abstract

*Background/Aim:* A high percentage of cancer patients use complementary therapies (CM) during their disease journey. Several barriers for CM prescription still exist among oncologists. This study explored oncologists' attitudes toward prescribing CM with oral supplements or confirming prescriptions made by others.

*Materials and Methods:* The study employed a mixed semi-quantitative and qualitative research strategy via a web-based platform interview as a preliminary step for a program of observational studies on the oncologist's prescriptions of oral supplements in cancer management, in Italy.

*Results:* Out of 95 invited oncologists, 40 participated in the study, mainly working in a general hospital or a cancer center. The deep knowledge of guidelines on integrative medicine was generally poor. The symptoms driving oncologists to initiate discussions on CM with patients were fatigue, anorexia/poor appetite, weight loss, insomnia, distress, neuropathy, or pain. The presence of reliable data in the medical literature on prescribing CM was a significant factor in choosing a supplement.

*Conclusion:* This study reveals that oncologists' limited knowledge and lack of standardized guidelines hinder the prescription of CM, despite recognizing its potential benefits. CM discussions are primarily patient-driven, with prescriptions influenced by reliable scientific data and symptom management. Expanding integrative medicine services and research on CM efficacy could enhance oncologists' confidence, improve patient care, and address unmet needs in oncology.

**Keywords:** Complementary medicine, oncologists' prescriptions, cancer patients, unmet needs, oral supplements.

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## Introduction

To date, it is estimated that up to 85-87% of cancer patients have used one form of complementary medicine (CM) during their cancer journey, with a mean of 30-40% (1-3). These figures may vary dramatically depending on several factors, including patients' needs and health provider-related factors, among which poor knowledge, lack of controlled scientific data, and prejudices stand out (4, 5). Geographical and cultural differences have also an impact on the use of CM, as happens in China, the cradle of traditional medicine, and in Germany, which ranks first in Europe for the number of published papers on integrative medicine (6-8). CM used in cancer patients includes a wide variety of agents, such as oral supplements (*i.e.*, vitamins, ions) and herbal compounds (*i.e.* roots, stems, leaves, flowers or seeds of plants), moxibustion, and procedures such as acupuncture, and mindfulness-based or mind/body practices (*i.e.*, yoga, tai chi, qigong, art therapy) (6-9).

Medical literature of the last three decades presents a high number of studies on the use of CM in various oncological settings (7, 9, 10). Most studies on oral supplements involved patients with breast, lung, and colorectal cancer; however, the benefits of oral supplements in these clinical settings are not fully elucidated (9-11). A survey of 190 oncologists employed a self-administered, structured questionnaire to explore their attitudes toward CM (10). Data showed that 20% of oncologists had no adequate knowledge of CM, while 25% had prescribed CM, primarily if they had used some form of CM. Overall, the level and quality of oncologists' knowledge of CM were low, despite their subjective evaluation that 84% of their patients used CM.

In 2023, a review of patient/doctor communication about CM usage showed a very high rate of nondisclosure, influenced by factors such as patient beliefs, health provider attitudes and knowledge, disease status, and type of CM (9). These data have significant limitations since they were derived from small studies (9). An extensive Japanese cross-sectional survey showed that most oncologists (82%) considered CM ineffective and were worried about the possible drug interactions with anticancer drugs (12). Only a minority reported a positive effect on their patients. A lack of reliable information generally influenced this negative attitude. In this challenging context, a significant barrier to disclosing CM among oncologists was the fear of patients abandoning conventional therapies (13). In this stressful setting, patient-physician communication is often disrupted, partly due to the impairment of hierarchical roles, inadequate knowledge, and physicians' difficulty capturing patients' points of view.

In recent years, these barriers have significantly diminished, as demonstrated by the inclusion of integrative services in some of the major oncology institutions in the world (14). An Italian survey of 438 physicians showed that more profound knowledge of CM was statistically more frequent among oncologists, especially those involved in clinical research at academic or research centers with years of clinical experience (15). Moreover, at least 50% of oncologists thought CM could benefit their cancer patients. The increasing interest in nutritional and integrative aspects of cancer management, as well as their impact on metabolism and the disease, has led a growing number of oncologists to become interested in the topic (16, 17). However, further research is needed on the attitudes of clinical oncologists towards CM.

To fill this gap our paper aims to report the results of a survey of oncologists' attitudes toward prescribing complementary therapies or confirming prescriptions made by others in cancer patients. The study focused on oral supplements, while mindfulness-based or mind/body practices were not the aims of this study.

## Materials and Methods

The Ethics Committee of the Kore University of Enna, Italy, approved this project. Oncologists were randomly chosen from the member list of the Italian Association of Medical Oncology including medical oncologists and cancer disease specific specialists, such as gynecologists, pneumologists, surgeons, urologists, and palliative therapy carers known to belong to multidisciplinary

Table I. *Characteristics of surveyed oncologists.*

| | | | |
|---|---|---|---|
| N. of oncologists interviewed | | 40 | 100% |
| Median age (years, range) | | 52 | 35-68 |
| Sex | Male | 22 | 55% |
| | Female | 18 | 45% |
| Years of practice | <10 | 8 | 20% |
| | ≥10-20 | 11 | 27.5% |
| | ≥20 | 21 | 52.5% |
| Working place | Academic | 6 | 15% |
| | General hospital | 19 | 47.5% |
| | Cancer center | 12 | 30% |
| | Community facility | 3 | 7.5% |
| Specialty | Medical oncology | 24 | 60% |
| | Radiotherapy | 5 | 12.5% |
| | Cancer surgery | 4 | 10% |
| | Palliative care | 2 | 5% |
| | Urology | 2 | 5% |
| | Gynecology | 2 | 2.5% |
| | Pneumology | 1 | 2.5% |
| Self-reported knowledge of CM* | None/very poor | 22 | 55% |
| | Low/uncomplete | 14 | 35% |
| | High | 4 | 10% |
| ASCO/SIO guidelines awareness and knowledge | Yes | 33 | 82.5% |
| | No | 7 | 17.5% |
| | No knowledge | 37 | 92.5% |
| | Knowledge | 3 | 7.5% |
| Presence of an integrative medicine service | Yes | 0 | 0 |
| | No | 40 | 100% |

*$p$-value=0.000106. CM: Complementary medicine.

teams. Oncologists were asked by telephone to participate in the survey. Those who agreed were interviewed via web videoconference as a preliminary step for a program of observational studies on oncologist-driven prescriptions of oral supplements in cancer management.

The survey followed a mixed semi-quantitative and qualitative research strategy, including demographic questions and items reflecting the research aims (18). The data categories and specific items are shown in Table I. The interviews were managed by a survey expert who could decode orally expressed concepts to interpret and evaluate the potential for validity and reliability errors (19).

Participants had to report the following demographic data: age, sex, workplace, years of experience, their subspecialty, and the presence of an integrative medicine service in the hospital. Discussed cultural data were awareness of guidelines (yes/no), practical knowledge of recommendations (yes/no), and self-reported knowledge of complementary medicine (none/very poor *versus* low/uncomplete *versus* high). Patient-related items included estimated rate of CM use, patient- or doctor-initiated discussion rate, type of symptoms, and unmet needs. The queries also included information on the patient's symptoms leading to prescription, the type of complementary medicine prescribed, and the main reasons for starting an integrative medicine discussion. The investigators refined and framed the collected data and reported it as descriptive statistics.

*Statistical analysis.* Descriptive data were reported as absolute number and their relative percentages. A Pearson's chi-square test was applied to compare the distribution of categorical variables. Statistical analysis and graphs generation were performed employing GraphPad Prism statistical software version 10.1.0 -264 (GraphPad Software, Boston, MA, USA).

## Results

Ninety-five randomly chosen oncologists were asked to participate in the survey, and only 40 consented (42%). Table I shows the characteristics of the 40 surveyed oncologists. The population mainly included medical oncologists (60%), radiotherapists (12.5%), and cancer surgeons (10%). Palliative care providers (5%), urologists (5%), gynecologists (2.5%), and pneumologists (2.5%) were less represented. All participants worked in southern Italy, while they were equally distributed among males and females (55 *versus* 45%). Almost half of the participants worked in a general hospital (47%), 30% in a comprehensive cancer center, and only 15% in an academic hospital.

Self-reported detailed knowledge of CM was high in 4 cases (10%), low or incomplete in 14 cases (35%), and non or very poor in 22 (55%; *p*-value=0.000106). Most participants were aware of ASCO/SIO guidelines, but most needed to read them carefully. Data showed no knowledge of the recommendations in 92.5% of cases and knowledge in 7.5% of participants. Thirty-three oncologists (82.5%) self-reported awareness. of CM guidelines, 3 (7.5%) reported knowledge of the recommendations, while 7 (17.5%) participants did not know the existence of CM guidelines. In no case were surveyed, oncologists reported working in an environment equipped with an integrative therapies service.

The oncologists reported that the prevalence of CM use among patients varied between 15 and 50% of their patients but reported a shallow oncologist-initiated discussion rate (15%). Table II depicts the main factors associated with oncologists' CM prescription or approval of medications suggested by others. The main symptoms for CM use included fatigue, anorexia or poor appetite, weight loss, insomnia, distress, neuropathy, and chronic pain. In most instances, the primary factor influencing the choice of a prescribed CM was the existence of medical literature that oncologists considered reliable.

As shown in Figure 1, the reasons for starting a CM discussion and eventual prescription by the oncologist included the possibility of filling patients' unmet needs (60%), lack of active conventional drugs (72%), avoidance of side-effects of standard medications, such as corticosteroids and progestins (40%), improvement of patient/physician empathy (28%), perception of efficacy (52%), hope for a placebo effect (28%), avoidance of unknown use of CM (28%) and reducing concern for unexpected side-effects (44%). All participants reported and agreed to the need to create a working group to carry out common studies to standardize the use of oral supplements as much as possible.

Table II. *Patients' symptoms leading to oral complementary therapy and type of supplements.*

| Symptoms leading to prescription | CM prescribed |
|---|---|
| Fatigue | Magnesium |
| | Zinc or other ions |
| | L-arginine |
| | Vitamins |
| | Ginseng |
| Anorexia/poor appetite | L-arginine, vitamins |
| Weight loss | L-arginine, vitamins |
| Insomnia | Melatonin, valerian, chamomile |
| Distress | Melatonin, antioxidants, valerian, chamomile |
| Neuropathy | L-acetyl-carnitine, alpha lipoic acid |
| Pain | Palmitoyl-ethanol-amide |

CM: Complementary medicine.

## Discussion

In the last decade, evidence and awareness of integrative interventions in cancer care have grown, with research now supporting the benefits of these interventions throughout the cancer journey (14, 20-22). Moreover, patient information on CM has rapidly increased worldwide due to easily accessible web-based information and the growing cultural interest in natural or holistic approaches alongside standard therapy (23). Very recently, the American Society of Clinical Oncology and the Society for Integrative Oncology have synergistically developed guidelines for applying integrative approaches to managing cancer-related symptoms (20). Overall, these guidelines offer sound

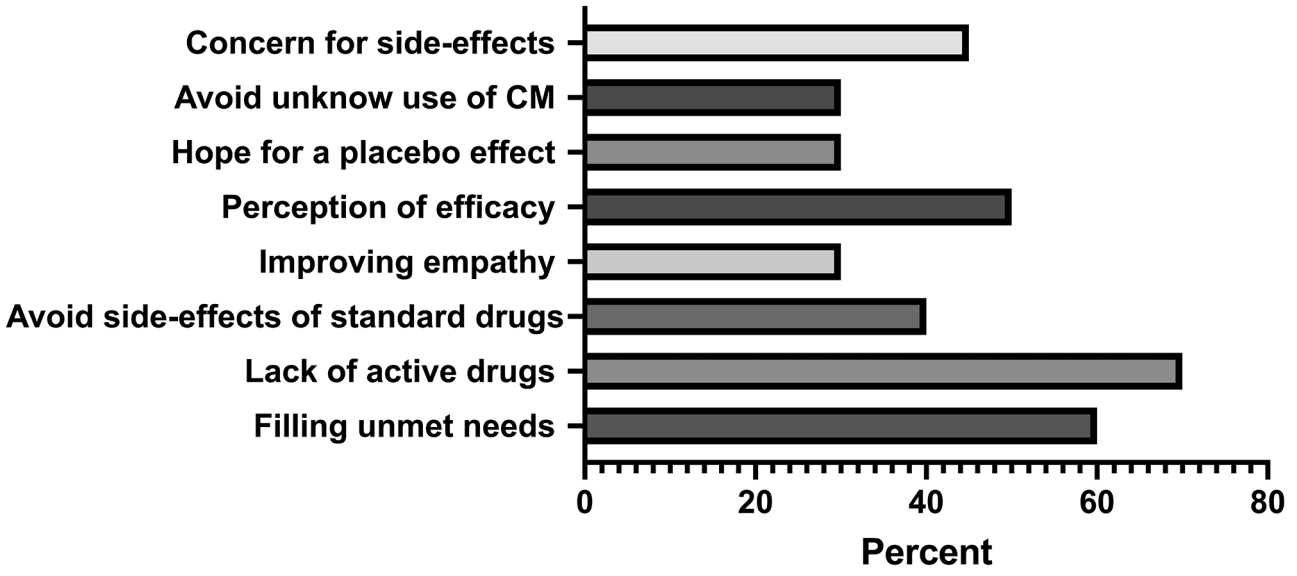


Figure 1. *Oncologists' reasons for prescribing complementary supplements.*

recommendations for managing cancer-related symptoms, such as fatigue during treatment, emphasizing mindfulness-based stress reduction and mind-body programs. However, barriers to such practices may exist within the patient population (24).

Medical literature concerning the use of CM in oncology is exceptionally abundant, but data regarding oncologist-initiated CM prescriptions are relatively scant (22, 25). In medical literature, the percentage of CM discussions and prescriptions initially driven by oncologists is relatively low, often less than 10%, and approaching 35% at best (22, 25, 26).

The symptoms that can lead cancer patients to use CM are extremely numerous and the effects of CM also vary. A recent systematic review of the effects of CM on patient-reported outcomes reported positive effects of mind/physical interventions on phycological and emotional symptoms, such as depression, anxiety, asthenia and pain (9). Oral CM may influence positively anorexia, constipations, xerostomia, mucositis, abdominal distension, fatigue, and other symptoms (9). However, results of most studies published so far do not lead to definitive conclusive results.

The use of CM is not limited to patients receiving active cancer therapy, but also to long-term survivors or cured ones. Canadian investigators surveyed 212 cancer survivors reporting the use of CM in 75% of cases. The most frequently used CM were group B and D vitamins, multivitamins, calcium, mindfulness-based stress reduction, and relaxing techniques. The uncertainty of CM efficacy was a major barrier to CM use, while anxiety, depression and physical symptoms predicted interest in CM use (27).

Our study focuses on oncologist-driven or approved CM prescriptions limited to oral supplements in cancer patients. To our knowledge, this study is unique in its objectives of evaluating oncologists' therapeutic attitudes towards supplemental CM, the clinical and management reasons for initiating discussions on integrative medicine with patients, and finally, the criteria for choosing prescribed CM. In many cases, discussion on CM use was initiated by patients and captured oncologists' attention because of the lack of conventional therapies that could control symptoms, unmet patient needs, and the presence of clinical conditions suggesting avoidance of standard supportive drugs, such as corticosteroids and progestins, as may happen in diabetes, obesity, and cardiovascular disease.

The knowledge of CM among patients with chronic diseases has been explored by Qureshi *et al.*, who surveyed 111 patients with cancer, end-stage renal disease, chronic noncancerous disease, and those needing surgical intervention (28). Two thirds of patients had no awareness of CM, while one quarter had knowledge of CM but with several uncertainties. Although CM knowledge differed among the groups, the difference reached statistical significance only between cancer patients undergoing active therapy and those with chronic noncancerous disease. Overall, these data underline the poor knowledge of CM among patients and their health-providers.

Oncologists' prescription preferences are oriented towards supplements equipped with data published in medical literature that is considered reliable. This aligns with data published on oral supplements, such as antioxidants, melatonin, l-arginine, magnesium, and vitamins (29-33). This attitude can be the result of the oncologists' willingness to deepen knowledge on integration or a way to avoid possible legal claims in case of unexpected toxicity (34, 35).

Medical literature shows that concerns about oral CM emerge as the most important factor and main barrier to the prescription of complementary cancer modality and discussion with patients. A cross-sectional study of 132 patients showed that 45% used CM during cancer treatment, including supplements and herbal medicines (34). The authors reviewed the literature and found that potentially dangerous CM/anticancer agents' interactions were low, mainly mediated by interference with the cytochrome systems. Due to the magnitude of CM use, patients should be inquired about using complementary agents to avoid life-threatening events (35). Stub *et al.* carried out a cross-sectional study comparing knowledge and attitudes of 466 health care providers with or without training in CM focusing on the health risks potentially stemming from the simultaneous use of CM with conventional cancer treatments (36). This study showed that most health-providers believed that unprogrammed CM use carried a risk and needed controlled efficacy and safety studies. These figures were significantly lower in physician and nurses. However, 50-60% of health-providers did not support or encourage CM use if asked specifically in this topic by patients. The same research team reported a review highlighting the direct and indirect risks of the uncontrolled use of CM (37). The former included possible contamination of oral CM, negative interactions with conventional cancer treatment, lack of scientific data, and poor information among physician and nurses. The indirect risks were mainly associated with the lack of scientific evidence for the effect of most CM, as well as with cultural differences in patients' management among CM and conventional health care providers. These factors potentially impede effective and constructive dialogue on integrative therapy.

In line with previous literature (38-41), most of the interviewed oncologists in our study agreed on the need for integrative medicine services in hospitals dealing with cancer patients. Oncologists also asked for a standardized assessment of patient's interest in the use of CM in routine cancer care and specific guidelines. Some countries have pioneered the creation of integrative medicine services for cancer patients, managed in synergy with oncologists delivering modern immunologic and biomolecular therapies (6, 41, 42). Previous studies have reported vital points for the organization of an integrative therapy service, such as dedicated areas, a referral oncologist expert in CM, and research programs (40, 41). However, this organizational aspect still needs to be implemented in Italy, as well as in other countries known for using traditional or unofficial medicine, where discrepancies still exist (8).

This study has some limitations due to a variety of sources of error intrinsic to the nature of the survey which may carry self-reporting bias (42). The relatively small sample population and the geographical location of interviewed subjects may not represent the whole population of oncologists in Italy. Moreover, the questions posed to the participants may not accurately reflect all aspects of the issue of CM in oncology, since the study was focused only on oral supplements, excluding other widely used integrative practices, thus restricting the conclusion to CM supplements. Finally, most participants had limited

knowledge of ASCO/SIO guidelines or recommendations, which may have influenced their participance or their responses to the survey.

## Conclusion

Our findings suggest a link between oncology health professionals' knowledge of CM and their attitude and practices regarding oral CM supplements prescriptions. The presence of reliable scientific data on CM is a major driver in prescribing oral supplements. The type of prescription is also influenced by the patient's symptoms and unmet needs that arise during the visit, as well as by comorbid diseases. This study underscores the need for precise standards and a more systematic evaluation of patients' interest in and use of complementary and alternative medicine in routine cancer care. Creating easily accessible, high-quality, and scientifically supported information about CM use in oncology may lead to for a safe and effective use of complementary therapies, eventually to better health outcomes.

## Conflicts of Interest

None of the Authors have any conflicts of interest regarding this study.

## Authors' Contributions

MRV and DS conceptualized and designed the study. DP and VG elaborated the questionnaire. DP, VG, DP, and GS performed statistical analysis and interpretation. All investigators interpreted the data. VG and DP drafted the article and figures. Finally, all investigators revised and approved this article. All Authors actively participated in this study, and MRV and GS participated equally.

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