

Review

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Review

Addressing Patients Request to Add Dietary Supplements in Cancer Care—A Suggested Approach

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Abstract: Dietary supplements are widely embraced by cancer patients seeking complementary and integrative approaches to their care. Unfortunately, many patients do not discuss supplement use with physicians, often due to perceptions of physician indifference or negativity toward supplements. This communication gap exposes patients to unreliable information sources and, potentially, unnecessary risk. As the healthcare landscape evolves, patients increasingly value physicians who recognize their pivotal role in shaping healthcare decisions. This patient-centered perspective emphasizes the provision of evidence-based information tailored to individual needs, open discussions on potential risks, and shared decision-making. It underscores the importance of respecting patient autonomy, offering alternative options, documenting preferences, and ensuring ongoing support while coordinating with the healthcare team. To address these needs, healthcare providers should transform their perspectives and become expert guides who embrace patients as informed, empowered participants. This approach prioritizes open dialogue that considers both facts and uncertainties regarding dietary supplement use, allowing for mutually informed decision-making. Here, we review the literature and present a practical approach emphasizing open discussions, transparency, and respect for patient autonomy. Following this approach, healthcare providers can empower patients to navigate the complexities of dietary supplement use in the context of cancer care, ultimately safeguarding patient safety and well-being.

Keywords: complementary medicine; alternative medicine; integrative medicine; cancer care; oncology; nutritional supplements; natural products; dietary supplements; unmet needs; patient centered care; patient doctor communication; compassion; empathy

1. Introduction

A recent consumer survey conducted by the Council for Responsible Nutrition (CRN) has unveiled an interesting trend in American healthcare habits: approximately three-quarters of Americans incorporate dietary supplements into their daily routines, with many users attributing these supplements to their overall well-being [1].

Dietary supplements (DS) represent a category of products designed to augment one's diet by providing dietary elements such as vitamins, minerals, herbs or botanicals, amino acids, and other such constituents. These supplements come in various forms, such as pills, capsules, tablets, or liquids [2].

Among the diverse array of complementary and integrative therapies adopted by cancer patients, DS rank among the most accessible and widely embraced. Studies from previous years suggest that anywhere from 20% to 90% of individuals affected by cancer turn to these products as part of their healthcare regimen [3,4].

Despite their common use, patients tend to shy away from discussing their DS usage with healthcare providers [5,6].

Moreover, healthcare professionals have voiced concerns about unsupervised supplement use potentially leading to adverse effects and unfavorable interactions, particularly in the context of cancer patients undergoing active treatment. For instance, according to animal studies in the Physician Data Query [7], vitamin C has been found to reduce the bioavailability of imatinib. Additionally, animal studies indicate that vitamin C might hinder apoptosis when used alongside medications like doxorubicin, cisplatin, vincristine, methotrexate, and imatinib [8]. Pre-clinical research also shows that EGCG or green tea extract can potentially counteract the anti-cancer effects of bortezomib. It is essential to note that most of these adverse interactions have only been observed in animal studies [7].

Regrettably, our current understanding of the effectiveness of DS in cancer care remains limited, with only a handful of benefits substantiated through clinical trials. A systematic review from 2012 suggested that there is insufficient data to endorse the use of DS in Westernized populations, although vitamin D and omega-3 fatty acids were notable exceptions [9]. In a more recent development, the 2018 World Cancer Research Fund/American Institute for Cancer Research Report cast doubt on the potential of DS to enhance prognosis or overall survival after a cancer diagnosis, drawing on evidence from observational studies and clinical trials [10]. According to the report, the primary course of action should be to obtain essential nutrients from dietary sources, with supplements considered only when a deficiency is demonstrated either biochemically (e.g., low plasma vitamin D levels, B12 deficiency) or clinically (e.g., low bone density). The authors added that DS should also be contemplated when nutrient intake persistently falls below two-thirds of the recommended levels. The report unequivocally discouraged the use of supplements for cancer prevention.

Given this consensus among experts about the lack of evidence supporting the use of DS for cancer patients and the potential risks associated with their use alongside cancer treatment, the question arises as to why DS remain popular among patients.

In one study, nearly 40% of patients attending an integrative oncology clinic in a major comprehensive cancer center said they arrived with the intention of discussing their supplement usage [11]. Of these patients, 75% were already using vitamins, and nearly 30% were using herbs before their consultation, all with the expectation of addressing these matters with their physicians.

In a more recent study at another comprehensive cancer center, approximately 50% of adult patients with breast, colorectal, lung, and prostate cancers undergoing active treatment reported using various DS [12].

Furthermore, numerous studies indicate that even cancer survivors are more inclined to use DS [13,14]. In one study, the prevalence of DS use was notably higher among American cancer survivors (70.4%) compared to cancer-free individuals (51.2%) [13].

Recent research offers the intriguing possibility that these DS might confer some beneficial effects for cancer patients [15,16]. These findings suggest that modifying certain nutrients in one's diet could influence the effectiveness of cancer therapies and alleviate cancer-related symptoms [15]. At times, DS may even enhance the efficacy of cancer treatments [16].

Nutrients can influence epigenetic states through mechanisms that include DNA methylation, histone modifications, and miRNA-dependent gene silencing [17]. These alterations have been associated with either an increased or a decreased risk of cancer development. There is compelling evidence that certain foods play protective roles in cancer prevention by directly inhibiting tumor progression or by altering the tumor's microenvironment to create unfavorable conditions for tumor initiation or growth [23].

This body of evidence indicates that patients may have valid reasons to explore DS usage. Consequently, there is a growing need to provide well-informed guidance on this issue in the oncology setting.

To unlock the potential benefits of DS, additional clinical studies are required to determine the optimal dosages, most effective administration methods, and bioavailability of various supplements. This ongoing research could validate and maximize the beneficial effects already observed.

In this manuscript, we shall explore patients' motivations for using DS and how it might affect the patient-doctor communication, and we will describe a possible approach to address the need for guidance on this issue, which has been expressed by patients and families affected by cancer.

2. Motivations for Supplement Use

While scientific evidence forms the foundation of clinical practice, patients often approach their healthcare with different perspectives. Understanding these motivations is crucial for healthcare providers, especially when dealing with patients affected by cancer. Many cancer patients turn to DS for a variety of reasons, each rooted in their desire to support their conventional cancer treatment with complementary and integrative therapies. These motivations offer valuable insights into why patients choose to incorporate DS into their cancer journey.

One of the primary motivations for using supplements is the management of treatment side effects [5,6,18–23]. These include nausea, fatigue, and digestive issues from treatments such as chemotherapy, radiation, and immunotherapy. Additionally, anxious patients with anxiety tend to use DS more than others without anxiety often seeking psychological support and a sense of empowerment to take control of their healthcare decisions [22]. For many patients, the primary goal of using DS is to improve their quality of life rather than to cure their cancer [5,6,18–22].

Beyond symptom management, cancer patients frequently turn to DS to enhance their immune system [5,6,18–22]. A robust immune response is vital for patients, helping them fend off infections, recover from treatments, and maintain overall health. Patients often see DS, especially those rich in vitamins, minerals, and antioxidants, as allies in strengthening their immune defenses.

For many cancer survivors, the fear of recurrence is a constant concern [5,6,19–22]. To alleviate this anxiety, some turn to DS, believing that these products possess anti-cancer properties that act as a shield against the return of the disease. This provides them with a sense of security and control.

The pursuit of control and empowerment is a significant driver behind supplement use. [5,6,19–22] A cancer diagnosis can be disempowering, leaving patients feeling adrift in a sea of uncertainty. For some, DS serve as a lifeline—a means to actively participate in their healthcare decisions, regain a sense of control, and exercise autonomy over their health.

Improving overall quality of life is a key objective when using supplements [5,6,19–22]. Patients seek enhancements not only in their physical well-being but also in their emotional and mental health. The holistic approach that supplements offer, addressing the body, mind, and spirit, makes them attractive as tools for enhancing overall well-being.

Cultural factors and deeply ingrained beliefs play a significant role in the decision to use DS. Cultural practices and traditions may encourage the use of specific supplements for health and healing, and patients tend to respect and follow these beliefs. [24]

The allure of a natural and holistic approach to health often guides patients to DS. Facing a life-altering diagnosis, patients often view supplement use as an act of self-care, a form of self-advocacy that allows them to take charge of their health. It empowers them to play an active role in their treatment journey.

Patients gather information from a wide array of sources, including friends, family, the internet, popular media, and other channels [5,6,19–22]. These sources introduce them to the world of DS and influence their choices. The credibility and accuracy of these sources varies widely, adding complexity to the decision-making process.

Recognizing and understanding these motivations is vital for healthcare providers. It enables them to approach the topic of DS with empathy, engage in productive conversations with patients, address their concerns, and guide them toward safe and informed choices. Effective communication should consider the multifaceted motivations behind supplement use and aim to support the patient's holistic well-being [20].

3. Challenges in Physician-Patient Communication

Effective communication between physicians and patients with cancer regarding the use of DS is a multifaceted process fraught with several challenges. These challenges can significantly affect the patient-provider relationship, the quality of care, and patient outcomes [20].

One fundamental challenge is the limited knowledge many physicians have about DS. Medical education primarily focuses on conventional treatments and pharmaceuticals, leaving healthcare providers ill-equipped to discuss DS with their patients. This knowledge gap results in a lack of guidance on this topic. A survey of US oncologists revealed that not even half were discussing DS use with their patients [25].

On the patient side, there is often a reluctance to disclose supplement use to their physicians [23]. This reluctance can stem from a variety of factors, including a fear of judgment or disapproval, concerns about the physician's lack of knowledge of supplements, a perception that conventional medicine providers do not want them to use alternative therapies, or sometimes even fear that their physician will discontinue the conventional cancer therapies [18–22]. This lack of openness leads to a breakdown in the exchange of information, with physicians often unaware of their patients' supplement usage [18].

The absence of robust scientific evidence for DS poses a substantial challenge. Supplements often lack the same level of rigorous research and safety data required of pharmaceutical drugs. This lack of clinical trials and comprehensive evidence makes it difficult for physicians to provide evidence-based recommendations or make informed decisions about supplement use. Both patients and physicians may feel uncertain about the effectiveness and safety of specific supplements [5,6,18–22].

Moreover, clinicians and patients alike may have concerns about the out-of-pocket financial investment that DS demand, potentially further straining patients' resources and distracting patients from the evidence-based focus on a well-rounded, whole-food, plant-based diet. Adult cancer survivors spend approximately \$6.8 billion annually on DS [26]. Further research on the safety and efficacy of DS use in patients with cancer is imperative to ensure a balanced cost/benefit ratio.

Time constraints in clinical settings can be a practical challenge. Physicians often have limited time during patient appointments. Discussing DS can be time-consuming, involving a detailed review of the patient's supplement regimen, potential interactions with prescribed medications, and patient education. These time constraints may hinder comprehensive discussions, leaving patients feeling unheard and misunderstood.

In some healthcare systems, physicians may not receive reimbursement for discussing DS or providing integrative care. This financial disincentive can lead to a lack of motivation to engage in in-depth conversations about supplements with patients, creating a disconnect between patient needs and healthcare provider priorities [19,20].

Differences in beliefs between patients and physicians can be a significant obstacle to effective communication. While patients may see supplements as a way to complement their conventional treatment and improve their well-being, physicians who do not share this perspective may struggle to effectively communicate or support these choices. These differing beliefs can result in misunderstandings and a lack of trust [20].

Patients often encounter information about DS that is conflicting, confusing, or misleading. Physicians must help patients with the complex task of sifting through this information by clarifying misconceptions, and providing evidence-based guidance [5,6].

Physicians must also manage patient expectations. Patients may have high hopes for DS, anticipating significant benefits. Balancing these expectations with realistic, evidence-based information about the potential benefits and limitations of supplements can be a delicate task [5,6,20].

Trust is built on the belief that physicians have their best interests at heart, and when patients feel their choices are not acknowledged or respected, trust begins to wane [20].

Patients may feel misunderstood by their healthcare providers. DS use is often deeply rooted in patients' beliefs, experiences, and personal wellness philosophies. When physicians fail to appreciate these perspectives and the reasons behind supplement use, patients can feel alienated. This can lead

to the belief that their healthcare providers lack the understanding needed to offer personalized care, further eroding trust.

A lack of open dialogue can create an atmosphere of secrecy and opacity within the physician-patient relationship. Patients might feel that their physicians are withholding information or not providing a complete picture of their care. Such feelings of secrecy can breed mistrust, leading to doubts about the transparency and honesty of the healthcare provider.

A breakdown in trust can influence treatment decisions. Patients who perceive their physicians as disregarding their preferences or choices regarding DS may become more hesitant to follow their treatment plans or make informed decisions about their care. This can have consequences for treatment adherence and outcomes and patients' overall well-being [20–22].

Moreover, a breakdown in trust may drive some patients to seek alternative healthcare providers who are more receptive to discussing and supporting DS use. While this can provide patients with a sense of understanding and alignment with their values, it may not always lead to the best healthcare outcomes, especially if alternative providers lack conventional medical training or fail to communicate with the patients' physicians [5,6,20].

Balancing patient autonomy with well-informed choices is a challenge for healthcare providers. Encouraging open discussions, providing evidence-based information, and engaging in shared decision-making are vital steps to support patient autonomy. This balance ensures that patients make autonomous, well-informed choices about DS while prioritizing their safety and overall well-being [20].

5. Developing an Approach to Address Cancer Patients' Requests to Incorporate Dietary Supplements

To respond effectively to the requests of cancer patients seeking to integrate DS into their treatment, healthcare providers must embrace a patient-centered perspective that acknowledges the patient's need for autonomy and empowerment. In today's healthcare landscape, patients increasingly value physicians who recognize patients' role as empowered participants in shaping their own healthcare choices. Physicians should be seen as informed intermediaries, expert guides, and consultants, with the patient at the center of decision-making. The optimal approach involves discussing both the facts and uncertainties surrounding DS with the patient, facilitating a mutually informed decision-making process. [20]

In 2009, the Society of Integrative Oncology (SIO) issued guidelines for the inclusion of complementary medicine in cancer care, and these guidelines included recommendations concerning the use of nutritional supplements. The SIO advised that patients interested in using DS should consult with trained professionals who could provide support, set realistic expectations, and weigh the potential risks and benefits [27].

Recognizing the importance of addressing patients' requests to incorporate DS into their care, the Clinical Practice Committee of the SIO in 2012 identified the necessity for a comprehensive approach suitable for integrative oncology settings. This approach places the patient at the center, aiming to provide evidence-based information tailored to individual patient needs, discuss potential risks, and promote shared decision-making. To progress in this effort to advise patients on the integration of DS effectively, the committee members compiled a list of 10 DS, which, at the time, were considered safe and had enough supporting evidence to discuss with patients. These DS were deemed appropriate for integration in specific situations, and this list was relevant at the time of publication, in 2012-2013. [5]

A prominent comprehensive cancer center in the United States has recently introduced another innovative care model that involves the use of a dedicated pharmacist to offer guidance to patients on the use of DS [28]. In this program, integrative medicine providers engaged in counseling patients to address unmet symptom needs and prescribed DS when deemed appropriate, considering the clinical context, patient preferences, and available research evidence, using the clinical pharmacist as an additional professional who helps with providing this advice [28]. To assess the feasibility and outcomes of this approach, researchers conducted a retrospective analysis using medical records. The

results demonstrated the viability of integrating DS into an academic oncology setting, showing high patient satisfaction levels and minimal adverse events [28].

Recognizing the evolving landscape of DS use in cancer care, we emphasize the need for a general approach provided by integrative oncologists. This approach should be adaptable for integration into oncology settings where additional professionals may not be available, relying primarily on the expertise of the integrative practitioner. Such an approach should be patient-centered, encompassing the provision of evidence-based information, tailored assessments of individual patient needs, discussions about potential risks, encouragement of shared decision-making, respect for patient autonomy, presentation of alternative options, documentation of physician and patient preferences, and the provision of ongoing support, all while ensuring coordination with the other members of the healthcare team. Staying informed and supporting informed and empowered choices are key components of this comprehensive approach, which ultimately enables patients to make well-informed decisions that prioritize their safety and well-being in the context of cancer care.

When a patient requests the addition of DS to their cancer care, healthcare providers must dedicate sufficient time to address the patient's needs thoroughly. To provide an informed response, providers should use reliable sources such as About Herbs from Memorial Sloan Kettering Cancer Center [29] or the Natural Medicine Database [30] to evaluate the safety and efficacy of the supplement in question, potential side effects, drug-herb-nutrient interactions, and product quality. The findings from such searches can be divided into three categories based on risk and benefit value:

1. High risk, low or unknown benefit
2. Questionable risk, low or unknown benefit
3. Minimal risk, clinical clues of benefit



Figure 1. A suggested approach to addressing patients' request to add dietary supplements in cancer care.

5.1. High Risk, Low or Unknown Benefit

If the research findings indicate that the use of a particular DS raises significant safety concerns, such as the potential for side effects and interactions, while the benefits remain unclear and are primarily based on speculation rather than clinical research, it is advisable to discourage such use. In such cases, healthcare providers should engage in a discussion that acknowledges the risks involved and also documents these concerns.

5.2. Questionable Risk, Low or Unknown Benefit

When the research findings reveal no known safety or interaction concerns based on clinical research, yet there is no concrete evidence of clinical benefits, patients should not be dissuaded from using the supplement. It is important to respect their choice, even if their motivations for using the supplement are not based on scientific evidence. In such situations, an open and honest discussion with patients about their motivations, as well as a thorough examination of the advantages and disadvantages of supplement use, should take place. Given the absence of major safety concerns, the approach should be to empower patients to make their own informed decisions regarding the use of the supplement.

5.3. Minimal Risk, Clinical Clues of Benefit

When the research findings indicate that the risk associated with a supplement's use is minimal, and there are clinical clues suggesting potential benefits, patients can receive support for this specific use. Even in this favorable scenario, healthcare providers should engage in an open discussion with patients about the advantages and disadvantages of the supplement. This discussion should also include recommendations for high-quality products, if available, as well as a conversation about the optimal dosage. Additionally, a plan for further follow-up to monitor the use of the supplement should be established.

The discussion of DS use should take place with all patients who seek advice about DS during and after their cancer care. Patient perspectives and expectations should be explored, and the inherent uncertainty in DS use should be discussed, including the pros and cons in all three categories.

It is crucial to emphasize that even if patients choose to go against advice, healthcare providers should maintain an open channel for communication, coupled with empathy and compassion. This approach helps to maintain communication and monitor DS use, adverse reactions, and potential interactions, which is essential for intervention or treatment adjustments. Another important aspect in approaching DS use among cancer patients is to inform the oncologist regarding the recommendations and patients' decisions. This information will help the oncologist understand the rationale behind the supplement use and help monitor for adverse effects or interactions in case they need to add new medications in the treatment plan for cancer.

The physician's role does not conclude with the initial discussion. Ongoing support and monitoring are vital as patients integrate DS into their care plan. Collaboration with other healthcare team members, such as oncologists and nurses, is essential to promote patient safety and well-being by ensuring that DS do not interfere with conventional treatments.

Remaining informed and updated is a commitment that physicians must uphold. The ever-evolving landscape of DS and their role in cancer care demands continuous dedication to learning. Ongoing education and staying informed about emerging evidence are essential to providing patients with the most current and evidence-based information.

The ultimate goal is to empower patients to make well-informed and empowered choices. By encouraging and supporting patients in their quest to make informed decisions, physicians ensure that patients are well equipped to navigate the intricate path of dietary supplement use in the context of cancer care. This comprehensive approach places patient safety and well-being at the forefront of healthcare decision-making.

This suggested approach addresses cancer patients' request to integrate DS in their care with a clear patient-doctor communication process relating to safety and efficacy, in a patient centered manner.

6. Recommending Dietary Supplements as Food

Many DS are derived from food, and although some DS are combinations of multiple ingredients, not all are. Therefore, advising the patient to take the whole food that the supplement is derived from is another strategy that might help meet the patient's expectations. One example is mushroom supplements in cancer. Data support that high dietary mushroom consumption is associated with lower risk of cancer [31]. Mushrooms are anti-inflammatory and immune enhancing and are often used in Asian countries during the cancer treatment. However, due to the paucity of clinical data in many other countries, we suggest dietary consumption of mushrooms that are accessible to the patients instead of using them as supplements. Green tea is another example; its active ingredient, ECGC, was found to be beneficial. However, ECGC consumption as a supplement has a risk of hepatotoxicity, and therefore dietary consumption of green tea can be recommended. In supplements comprising several ingredients, the clinician can review the ingredients and recommend their use in the dietary form when possible.

7. Conclusion

In conclusion, effective communication between physicians and cancer patients concerning the use of DS is essential for building and maintaining trust and ensuring that patients receive the best possible care. While numerous challenges exist in this communication process, acknowledging and addressing these challenges are vital for improving the patient-provider relationship, enhancing the quality of care, and ultimately achieving better patient outcomes.

Healthcare providers need to shift their perspectives to accommodate patients as informed participants in their healthcare choices. Physicians should serve as expert guides and consultants, recognizing the patient's need for autonomy and empowerment. We suggest that an optimal approach is to engage in open dialogues that consider both facts and uncertainties related to DS, allowing for mutually informed decision-making.

This approach underscores that open discussions, transparency, and respect for patient autonomy are central to addressing the challenges in physician-patient communication. By following such an approach, healthcare providers ensure that patients are well equipped to navigate the complexities of dietary supplement use in the context of cancer care, ultimately prioritizing patient safety and well-being.

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