

The Benefits and Challenges of the Implementation of Herbal Medicines and Supplements as Complementary Treatments for Cancer Patients

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On my honor as a University Student, I have neither given nor received unauthorized aid on this
assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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INTRODUCTION

In a world where healthcare costs are rising and patient outcomes may vary, the challenge of ensuring accessible and effective healthcare has never been more urgent. The solution may not solely lie in cutting edge technology, but also in rethinking how we view and approach healthcare from a cultural, social, and institutional perspective. Healthcare systems around the world are constantly striving to improve patient outcomes while also keeping up with new technology and the complex social and cultural factors that shape care. While there are many medical advancements that have led to groundbreaking treatments, healthcare is not solely defined by science. Healthcare is also influenced and embedded in cultural beliefs and traditions. Many patients seek alternatives to conventional medicine which reflects the broader need to understand how different healthcare practices can coexist in this modern age. As healthcare continues to evolve, overcoming these challenges will take not only innovative technology, but a thoughtful approach to the social factors that play a role in health outcomes.

In this thesis, I investigate the role of herbal medicine as a complementary treatment for cancer patients. Through this project, I investigate the challenges and benefits associated with incorporating herbal medicines into mainstream healthcare. In the paper, I use the Social Construction of Technology (SCOT) framework to examine how different social groups such as patients, healthcare providers, and regulators, interpret and interact with herbal treatments. Many people view herbal medicine in different ways, and it is not as tightly regulated as conventional treatments, which often follow strict rules and guidelines. Some people believe it is a helpful addition to medical care, while others are unsure about it because there are not clear standards for its effectiveness and safety. I will also explore the cultural, social, and institutional factors that influence the acceptance and regulation of herbal medicines in cancer care.

I have divided this paper into a few key sections. First, I provide a brief background on the use of herbal medicine and supplements in healthcare and cancer care. Next, I examine the potential benefits of herbal treatments, including their role in symptom management, accessibility for low income patients, and integration into holistic treatment plans. Following this, I analyze the challenges associated with herbal medicines. These challenges include regulatory concerns, potential risks, as well as the spread of misinformation. I also explore what needs to be considered to successfully integrate herbal treatments into cancer care. I focus particularly on closing the gaps in regulation, scientific evidence, and transparent communication between healthcare providers and patients. By addressing these aspects, I provide a comprehensive understanding of how herbal medicines and supplements can be safely and effectively incorporated into cancer care, balancing its potential benefits with the need for proper oversight and patient education.

By integrating literature reviews as well as policy and communication research, I highlight valuable insights of the complexities of implementing alternative therapies within conventional healthcare systems. Ultimately, I aim to contribute to a more inclusive and patient centered approach to cancer treatment. I do so by highlighting the intersection of culture, policy, and medical practice.

BENEFITS OF HERBAL MEDICINES IN CANCER TREATMENT

Herbal medicines have been used for centuries to manage various health conditions, and their role in cancer treatment has continued to evolve. Many cancer patients use herbal remedies alongside conventional treatments. They are motivated by cultural traditions, financial constraints, and a want for a more holistic approach to their care. These treatments also offer promising benefits in cancer care, providing patients with potential complementary treatments

that could improve their well being as well as support traditional therapies. I use the SCOT framework to explain the varied interpretations of herbal medicines by different social groups, emphasizing interpretive flexibility: the idea that a technology or treatment is understood and valued differently depending on the perspectives of distinct social groups (Pinch & Bijker, 1987).

For many cancer patients, particularly in low and middle income countries, herbal medicines can provide an affordable and accessible alternative to conventional treatments as chemotherapy and targeted therapies are often expensive. In these regions, chemotherapy and targeted therapies may be out of reach for a significant portion of the population due to high costs and limited healthcare resources. On the other hand, herbal medicines are often more readily available and less expensive, making them a good alternative for individuals who need treatment. This also demonstrates interpretive flexibility as different social groups, such as low-income patients, view herbal medicines as a necessary alternative rather than just a complementary option. According to John Asiimwe and coauthors, people in lower income countries may use herbal medicines more because “patients with cancer are unable to pay for conventional cancer care (financial constraints)” (Asiimwe et al., 2021, 11). This highlights an important role that herbal medicines can play in providing an alternative for patients who face financial barriers to conventional cancer care. By offering a more affordable and accessible option, herbal medicines help ensure that individuals in these regions are not deprived of treatment due to economic constraints. This makes them an important resource in cancer care for underserved populations. Over time, the increasing acceptance of herbal treatments among medical professionals and policymakers could lead to technological closure, a stage in SCOT where a technology or treatments becomes widely accepted and a recognizable option in cancer care.

Cultural factors also play a significant role in the widespread use of herbal medicines. In many societies, traditional practices have been passed down through generations, heavily influencing the healthcare choices people make. People often turn to herbal remedies out of familiarity or trust in these longstanding practices since they are usually deeply embedded in cultural traditions, further illustrating interpretive flexibility. For instance, Asiimwe and coauthors explain that people, particularly from those in low and middle income countries may use herbal medicines more “due to deeply rooted cultural practices related or favorable to use of herbal medicines” (Asiimwe et al., 2021, 11). Furthermore, the use of herbal medicine is not limited to regions with limited access to conventional treatment. Many patients incorporate herbal remedies alongside modern medical treatments, showing the flexibility of these approaches. For example, “Asian countries such as South Korea and Taiwan, despite having the conditions and economic power to receive high-quality conventional therapies, patients from these countries still continue to use herbal medicine while accepting conventional therapies” (Asiimwe et al., 2021, 11). This emphasizes how herbal medicine is valued for its perceived benefits, even in places where conventional medicine is accessible. The ability to integrate herbal treatments with conventional care highlights their adaptability, allowing people to personalize their treatment based on cultural beliefs, personal preferences, and what they see as effective.

One of the more widely recognized benefits of herbal medicines and supplements in cancer care is their ability to help manage treatment related side effects. Many cancer therapies, such as chemotherapy and radiation, cause significant side effects. These include nausea, fatigue, pain and a weakened immune system. Herbal medicines have been traditionally used to help alleviate these symptoms, providing patients with additional support throughout their treatment. For example, Sho-saiko-to, a well known herbal formulation used in traditional

Chinese and Japanese medicine, has demonstrated significant therapeutic benefits. Baical skullcap (*Scutellaria baicalensis*), a key ingredient in this formulation, has been used for about 3,000 years due to its medicinal properties. Sho-saiko-to was administered to 1.5 million patients with chronic liver diseases over an eight year period and was found to significantly suppress cancer development in the liver. Its long history of use has proved its safety and efficacy in managing liver conditions, leading to its approval as a prescription drug by the Ministry of Health and Welfare in Japan (Wheat & Currie, 2008). The recognition of Sho-saiko-to in mainstream medicine highlights how certain herbal formulations can act as complementary benefits in cancer care, particularly in reducing treatment side effects and improving patient well being.

Another reason some cancer patients turn to herbal medicines and supplements is because they see it as a more natural and safer option to conventional treatments, which often come with severe side effects. Many plant-based remedies contain bioactive compounds that have been used for centuries to support the body's healing processes. Research suggests that populations in Southeast Asian countries, where diets are rich in chemopreventive foods such as garlic, ginger, turmeric, and green tea, have significantly lower risks of developing certain cancers compared to those in North America. These dietary ingredients, which contain compounds like polyphenols and organosulfur compounds, help inhibit tumor growth and are considered pharmacologically safe (Treasure, 2005). Unlike synthetic drugs, which may introduce foreign chemicals into the body, herbal medicines are usually seen as working in harmony with the body's natural processes. Herbalists argue that traditional plant based remedies align with the body's innate ability to heal, describing the relationship between humans and medicinal plants as one that has evolved over billions of years (Treasure, 2005). This deep-rooted connection has helped build

trust in herbal treatments as a gentler approach, especially for patients who do not want to fully depend on pharmaceutical interventions. As a result, many patients view herbal medicines not only as a complementary treatment, but also as a means of maintaining a sense of control over their health. This growing interest highlights the importance of offering diverse treatment options that respect both scientific advancements and traditional healing practices.

CHALLENGES AND RISKS

Despite their perceived benefits, the use of herbal medicines in cancer treatment still presents several challenges and risks. Many patients turn to herbal remedies due to affordability, cultural traditions, or as complementary therapies. However, concerns persist regarding their safety, efficacy, and regulation. From a SCOT perspective, the perceptions and risks associated with herbal medicines are shaped by different social groups including patients, healthcare providers, and regulatory bodies. Key issues include a lack of standardized formulations and scientific evidence, potential harmful drug interactions, and the rapid spread of misinformation. Addressing these concerns is essential to ensure patient safety.

One of the main concerns with herbal medicines is the lack of strict regulation and quality control. Many herbal products are not subjected to the same level of scrutiny compared to conventional pharmaceuticals which go through rigorous testing and approval processes. As a result, "herbal preparations do not require any evidence of quality, potency and safety before marketing," which means that the variability in how these products are grown, processed, and marketed can lead to inconsistencies in their potency and purity (Saggar et al., 2022, 110). This lack of regulation contributes to the risk that patients may use products without fully understanding the potential dangers or side effects. Furthermore, in many countries herbal remedies are often classified as foods or dietary supplements rather than medicines (Saggar et al.,

2022). This classification reflects the way regulatory institutions frame herbal medicine, shaping how these products are perceived and controlled. In the United States, for example, the Dietary Supplement Health and Education Act (DSHEA) of 1994 places herbal supplements in the category of foods, not drugs. As a result, manufacturers are prohibited from making disease claims, such as stating that a product can diagnose, treat, or cure an illness (Center for Drug Evaluation and Research). This could lead to a lack of oversight since the standards for dietary supplements are generally less strict than those for drugs, which further complicates efforts to ensure the safety and quality of these products.

Additionally, the poor quality of some herbal medicines can be due to several factors in the processing and harvesting stages. Issues such as haphazard collection methods, ineffective agricultural practices, and improper harvesting procedures contribute to the degradation of the quality of herbal products. Adulteration is another major issue, where herbal products are substituted with unauthentic or substandard materials. This can include the intentional use of synthetically manufactured substances or the addition of poisonous materials like lead or synthetic drugs such as sildenafil, warfarin, and estrogen. Sachin Saggar and coauthors have also shown that many herbal formulations are contaminated with heavy metals such as lead, arsenic, and mercury, which pose significant health risks to consumers (Saggar et al., 2022). These concerns further highlight the critical need for improved regulation and quality control in the herbal medicine industry. Without these standardized regulations, patients may unknowingly consume unsafe or ineffective products, undermining the reliability of herbal treatments.

Another significant risk is the potential for adverse interactions between herbal medicines and conventional cancer treatments. Many cancer patients use herbal remedies alongside chemotherapy, radiation, or immunotherapy, sometimes without consulting their healthcare

providers. Certain herbal compounds can interfere with drug metabolism, reducing the effectiveness of cancer treatments or increasing toxicity. For instance, St. John's Wort a popular herbal remedy, has been shown to decrease the efficacy of some chemotherapy drugs by inducing cytochrome P450 (CYP) enzymes, particularly CYP3A4, which is involved in the metabolism of many anticancer medications. This induction can reduce the bioavailability of chemotherapy drugs such as paclitaxel, vincristine, and doxorubicin, potentially leading to therapeutic failure (Wheat & Currie, 2008). Similarly, garlic and ginseng can thin the blood, potentially increasing the risk of excessive bleeding during surgery or chemotherapy (Saggar et al., 2022). These risks highlight how different social groups, such as patients and healthcare providers, attach different meanings to herbal medicine, with patients often viewing them as safe and natural, while medical professionals may emphasize their potential risks. Without proper medical guidance, the use of herbal medicines and supplements can compromise treatment outcomes and lead to harmful side effects.

Misinformation about herbal medicine further complicates these challenges, especially with the widespread use of social media and other online platforms. While these platforms can provide valuable health information and support networks, they can also contribute to the rapid spread of unverified claims. In addition to social media, personal networks such as friends and family play a significant role in shaping perceptions of complementary and alternative medicine (CAM). Audrey Schils and coauthors have shown that 82% of patients fully trust the information they receive about CAM, regardless of the source (Schils et al., 2023). The strong influence of family in healthcare decision making has been more widely accepted, as families play a central role in both promoting health and managing illness at home (Kumar et al., 2023). However, without proper education and access to credible sources, families may unintentionally reinforce

misinformation about CAM and influence treatment choices based on personal beliefs or unverified claims rather than scientific evidence. This deep seated trust in non-evidence based sources can lead some patients to rely on anecdotal success stories or influencer recommendations rather than scientific research, increasing the likelihood of adopting ineffective or even harmful treatments. To address this issue, healthcare providers should act as health coaches, equipping families with accurate information and integrating them into evidence-based treatment discussions, in efforts to strengthen family capacity in healthcare (Kumar et al., 2023).

Jeremy Ng and coauthors have shown that social media is an ideal environment for spreading false information, with one study identifying that 33% of YouTube videos on hypertension were misleading, many of which promoted unproven alternative treatments. Similarly, cancer treatment misinformation is frequently spread not just by patients, but by other actors on platforms like Twitter, further blurring the lines between legitimate medical advice and unfounded claims. Additionally, misleading videos on traditional Chinese medicine for inflammatory arthritis were found to be highly prevalent, with almost half (about 46%) of the content identified as unreliable (Ng et al., 2023). Since patients often place unquestioning trust in both personal networks and social media sources, misinformation can spread quickly and become deeply ingrained in public perception. Furthermore, the fast pace that these false claims circulate on platforms like YouTube and Twitter can amplify confusion and distrust in conventional treatment methods. Given the prevalence of social media these days, the lack of oversight on these platforms increases the risk that individuals will make medical decisions based on misleading information rather than evidence based care, which could lead to potential harm.

MOVING FORWARD: IMPROVING COMMUNICATION, REGULATION, AND INTEGRATION

Despite the growing popularity of herbal medicines and supplements in cancer treatment, significant gaps remain in scientific research, healthcare integration, and regulatory policies. While many patients turn to these treatments, the lack of rigorous, large scale clinical trials limits their credibility and acceptance within the medical community. Healthcare providers have mixed opinions — Sukvinder Bhamra and coauthors suggest that while 66% of medical professionals acknowledge the potential effectiveness of herbal medicines for treating various health conditions, only 58% view them as safe (Bhamra et al., 2019). This uncertainty contributes to inconsistent recommendations and a lack of open communication between patients and providers. Addressing these challenges requires a more structured evidence based approach, encouraging more open discussions between medical professionals and patients, and implementing stronger research and regulatory measures to bridge the gap between traditional and modern medicine.

One of the main challenges in improving the credibility of herbal medicine is the limited availability of high quality scientific evidence and data. Many herbal treatments lack robust clinical trials, leading to skepticism among healthcare professionals and policymakers. Without clear, evidence-based guidelines, physicians and other practitioners may view herbal medicine as unreliable or inadequately studied. Additionally, concerns about potential interactions with conventional treatments and the variability in herbal product formulations further contribute to skepticism. This skepticism demonstrates the ongoing struggle for rhetorical closure. While some groups accept and advocate for herbal medicine as a legitimate alternative, others resist its acceptance due to the lack of standardization and medical validation. To address this,

governments and regulatory bodies should establish dedicated funding initiatives for large scale clinical trials focused on commonly used herbal treatments. More rigorous clinical studies and clearer guidelines on safe integration with conventional care are needed to increase medical professionals' confidence in herbal medicine.

Improving communication between healthcare providers and patients is also essential in addressing concerns about herbal medicine. Effective communication can help increase patient confidence and adherence to evidence based recommendations while preventing negative interactions between conventional and complementary treatments (Stub et al., 2016). However, when communication is lacking patients may feel dismissed or misunderstood, leading them to seek alternative treatments without proper guidance. This disconnect highlights the competing frame of reference among social groups and how patients may perceive herbal medicine as a holistic and empowering choice, while physicians who follow conventional medicine, may view it as unproven and risky. A collaborative, patient centered approach emphasizing mutual decision making and addressing both medical and psychological needs, has been shown to improve adherence to conventional treatment while allowing patients to make informed choices about complementary therapies (Stub et al., 2016). Encouraging healthcare providers to engage in open, evidence based discussions about herbal medicine, rather than outright rejecting it, can help patients navigate their options more safely. This engagement could be key in moving toward closure, where a consensus is reached on how herbal medicine can be safely and effectively incorporated into healthcare. Ultimately, by promoting an open dialogue, healthcare providers and professionals can build trust with patients, ensuring that herbal medicines and other complementary treatments are used safely and in a way that supports overall treatment goals.

Policymakers also have a role to play in ensuring that herbal medicine is both safe and accessible. Strengthening regulations on product quality, standardizing dosages, and funding clinical research could help integrate herbal treatments more effectively into evidence based medicine. Currently, many herbal medicines and supplements are marketed without rigorous safety and efficacy testing, leading to widespread variability in their potency and purity. Part of the challenge is that herbal medicines often contain hundreds of natural compounds. Evaluating the safety and efficacy of each one, especially in multi-herb products, would be extremely time consuming and resource intensive (Ekor, 2014). However, this complexity highlights the importance of addressing these regulatory gaps, which would not only protect consumers, but also provide healthcare providers with the confidence to discuss herbal medicine as a legitimate complementary option. Furthermore, countries around the world are actively working to promote the integration of traditional medicines within global healthcare systems. For example, in 2024 the Chinese government pledged \$5 million over five years to support the World Health Organization's Traditional, Complementary, and Integrative Medicine program (2024). The U.S. could consider following a similar approach, increasing funding to support research and the integration of herbal medicines into the healthcare system, ultimately promoting better global health outcomes.

Ultimately, moving forward requires a multifaceted approach, one that expands scientific research, encourages open communication between patients and providers, and strengthens policy frameworks to ensure safety and efficacy. By recognizing the interpretive flexibility surrounding herbal medicine, the healthcare system can work toward rhetorical closure through improved research, dialogue, and regulation. This will help better integrate herbal medicines and supplements in a way that maximizes benefits while also minimizing risks.

CONCLUSION

This thesis has explored the role of herbal medicines in cancer treatment, examining both their potential benefits and the challenges they pose in modern healthcare. The integration of herbal medicines and supplements with conventional medicine highlights a complex intersection of cultural, social, and institutional factors that shape healthcare decisions and policies. As healthcare systems aim to improve patient outcomes and accessibility, understanding the complex role of herbal medicine in cancer care is crucial.

Herbal remedies offer significant benefits, particularly in low-income regions where modern cancer treatments may be out of reach due to financial or other constraints. They can provide an affordable and accessible alternative that aligns with some patients' cultural practices, offering a personalized and holistic approach to treatment. Furthermore, many herbal medicines have shown the ability to alleviate the side effects of conventional cancer therapies, improving patients' quality of life throughout their treatment journey.

Despite these benefits, there are still many challenges associated with the use of herbal medicines and supplements. The lack of standardized regulation, inconsistent quality control, and the potential for harmful drug interactions pose significant risks. Additionally, the spread of misinformation through social media and personal networks can cause increased uncertainty and distrust around these alternative treatment options. It is important to have a more thorough and transparent approach to research, regulation, and communication in order to ensure patient safety and to ensure the effective integration of herbal remedies.

The integration of herbal medicines as complementary treatments for cancer patients presents several challenges, but with more research, stronger regulation, and clearer communication these remedies have the potential to serve as a valuable component to traditional

therapies. By tackling these issues, healthcare systems can more effectively meet the diverse needs of patients, enabling them to make informed decisions and enhancing their overall healthcare experience.

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