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Original Research

Use of Complementary and Integrative Medicine Among Cancer Survivors in Exercise Rehabilitation: A Cross-sectional Analysis

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Abstract

Complementary and integrative medicine (CIM) is commonly used by cancer survivors; however, patterns of use among individuals engaged in structured exercise rehabilitation remain understudied. This cross-sectional survey examined CIM use among 157 cancer survivors enrolled in a structured exercise-based rehabilitation program. CIM modality use (dependent variable) was grouped into herbal supplements, mind-body practices, and manipulative and body-based categories and analyzed with demographic and clinical characteristics (independent variables). Descriptive statistics characterized usage patterns, and Pearson's chi-squared tests and one-way ANOVA were used to evaluate associations between CIM modality group and demographic or clinical characteristics. Sixty-two percent of participants reported lifetime CIM use, and 49% reported current use, with an average of 2.55 modalities per user. Herbal supplements were used the most, followed by manipulative and body-based practices. CIM modality group was significantly associated with education level ($\chi^2(12) = 22.43$, $p = 0.033$) and cancer type ($\chi^2(40) = 58.42$, $p = 0.030$), but not age or cancer stage. Post-hoc residuals suggested that participants with higher education were more likely to use multimodal CIM approaches, whereas patterns varied across cancer diagnoses. CIM use was prevalent among survivors participating in structured exercise rehabilitation,

with education and cancer type influencing modality engagement. Interpretations should be made cautiously given the cross-sectional design and absence of detailed safety or adverse-event data. Future research should incorporate longitudinal tracking and systematic safety assessments to better characterize CIM use within integrative oncology settings.

Keywords
Cancer; exercise rehabilitation; cannabis; alternative medicine

1. Introduction

Complementary and integrative medicine (CIM) includes diverse health practices, such as the use of herbal supplements, mind-body interventions, and manipulative therapies that complement conventional medicinal treatments [1]. Among cancer survivors, CIM is known for its potential to alleviate symptoms, improve quality of life, and support psychological well-being [2, 3]. Studies indicate that 40-52% of cancer survivors use CIM, with most users reporting positive effects (77.9%) and a small proportion experiencing negative side effects (4.4%) [4, 5]. Specific CIM modalities, such as yoga, acupuncture, and herbal supplements, are linked to improvements in fatigue, pain management, and emotional resilience among cancer survivors [6].

Despite its growing acceptance, CIM use among cancer survivors is often underreported to healthcare providers. Up to 77% of CIM users do not disclose their use, citing reasons such as perceived disinterest, fear of disapproval, or lack of provider inquiry [7, 8]. This communication gap may hinder safe and effective integration of CIM into adjuvant care, particularly given the variability in CIM acceptance and regulation across different healthcare systems [9, 10]. The potential for drug interactions or contraindications underscores the need for improved provider-patient communication in oncology settings [11].

Regular exercise is widely recommended as a treatment to improve cancer survivorship due to its numerous benefits. Aerobic and resistance training improve a range of cancer-related health outcomes, including fatigue, quality of life, physical function, muscular strength, cardiorespiratory fitness, body composition, and psychological well-being [12]. However, the extent to which cancer survivors engaged in structured exercise programs in concomitance with other CIM modalities remains unclear. Cancer rehabilitation centers offer an ideal setting to explore CIM use patterns and facilitate informed discussions among survivors and healthcare providers.

Given the increasing prevalence of CIM in conventional cancer treatment and survivorship care, it is crucial to explore the prevalence and patterns of CIM use among cancer survivors, particularly those involved in exercise rehabilitation programs. Therefore, this cross-sectional study aimed to: (1) examine the prevalence and patterns of CIM modality use among cancer survivors participating in exercise rehabilitation, and (2) explore associations among CIM modality use and demographic and clinical characteristics.

2. Materials and Methods

2.1 Participants

Cancer survivors participating in a 12- to 24-week exercise-based cancer rehabilitation program at the University of Northern Colorado Cancer Research Institute (UNCCRI) in Greeley, Colorado were invited to participate in this study. The exercise regimen followed a structured 4-phase protocol which incorporates progressively intense exercises with in-person visits to the facility 3 times per week. Each exercise program is customized to the survivor's specific cancer type and stage, as well as their initial fitness. Phases incorporate aerobic, resistance, flexibility, and balance training, with initial phases emphasizing light-intensity for survivors undergoing active cancer treatments such as chemotherapy, radiotherapy, and immunotherapies. As survivors complete their conventional treatments, they advance to more rigorous training, increasing their exercise intensity until they successfully complete the comprehensive "true cancer rehabilitation" program [12].

Participants were eligible for participation if they were: 1) at least 18 years of age, 2) had a physician-confirmed cancer diagnosis, 3) were willing and able to complete surveys, and 4) were actively enrolled in the UNCCRI cancer rehabilitation program.

2.2 Survey

The paper-based survey included questions on general descriptive information, cancer history, treatment modalities, education level, and physical activity levels. The survey instrument was developed by the UNCCRI research team for internal program evaluation to capture CIM use among cancer survivors enrolled in exercise-based rehabilitation. Although the tool has not been formally psychometrically validated, its structure and content were informed by survey frameworks described in prior reviews of CIM use among cancer populations and also identified similar question domains and unstandardized instruments as typical in this field [13, 14]. The instrument was also reviewed by content experts and several cancer survivors to help establish content and face validity. This survey therefore served an exploratory function, to characterize CIM use patterns, motivations, and communication behaviors rather than to measure latent constructs or infer causal relationships. Additional CIM-specific questions addressed past, present, and anticipated use, frequency and duration, efficacy, safety, and healthcare provider communication (Supplementary File A).

2.2.1 Demographic and Clinical Characteristics

Participant demographics included age, biological sex, and educational attainment level (middle school, high school, some college, college degree, and other). Additionally, the level of functional impairment in daily activities was assessed, which aimed to measure the extent to which an individual's routine activities are restricted due to health or physical conditions ("not limited at all," "somewhat limited," "bed rest more than 50% of the time," and "total bed rest"). Clinical characteristics were also obtained and included cancer type and stage, years since diagnosis, past, present, future use of conventional cancer treatment, and conventional treatment modality (surgery, chemotherapy, radiation therapy, hormone therapy, and palliative care).

2.2.2 Complimentary and Integrative Medicine Use Evaluation

The evaluation included CIM modalities that were grouped as follows: herbal supplements (vitamins, minerals, multi-vitamins, cannabis, herbs, ginseng, and astragalus), mind-body practices (yoga, tai chi, and qi gong), and manipulative and body-based practices (massage therapy,

acupuncture, and chiropractic). Participants were asked about past, present, and anticipated future use of individual CIM modalities. Additional questions addressed CIM history, frequency, perceived safety, side effects, reasons for use, sources of information, and communication with healthcare providers.

2.3 Statistical Analysis

Descriptive statistics (counts, percentages, means, and standard deviations) were used to summarize participant characteristics and CIM use patterns. Individual CIM modalities were recoded into binary indicators and grouped into combinations of the three CIM categories (herbal supplements, mind-body practices, and manipulative and body-based practices) to form CIM modality groups (e.g., herbal only, manipulative only, herbal + manipulative, all three modalities). To explore associations among variables, Pearson's chi-squared tests were conducted to examine relationships between CIM modality group and categorical demographic or clinical characteristics (e.g., education level, cancer type, cancer stage). Confidence intervals (95% CI) were calculated for prevalence estimates, including lifetime and current CIM use and the most frequently reported individual CIM modalities. One-way analysis of variance (ANOVA) was used to assess age differences across CIM groups. All statistical analyses were performed using SPSS 25 (IBM Corp., Chicago, IL), with significance set at $p < 0.05$.

2.4 Ethics Statement

Data collection occurred at the Institute, with voluntary participation following verbal informed consent, which was obtained after participants were fully briefed on the survey objectives, content, and the estimated time for completion. The survey protocol was approved by the University of Northern Colorado Institutional Review Board (UNC IRB #2005001496).

3. Results

3.1 Participant Demographics and Clinical Characteristics

A total of 157 cancer survivors completed the survey. Mean age was 62 (±12) and ranged from 28 to 92 years old (Table 1). Age did not differ significantly across CIM groups ($F(4,151) = 0.62$, $p = 0.65$). Other levels of education included cosmetology (n = 1), graduate school (n = 4), a master's degree (n = 23), and a doctorate degree (n = 11). Cancer types and stages among respondents varied, with other cancer types including melanoma (n = 1), bladder (n = 1), liver (n = 1), and thymoma (n = 1), and other cancer stages included Gleason stage 8 (n = 2), and unknown (n = 3). More than half of the participants reported no limitations in their daily activities, and most were within 5 years of cancer diagnosis. At the time of the survey, participants were mainly undergoing chemotherapy and receiving hormone therapy (Table 2).

Table 1 Demographic and clinical characteristics of study participants.

Characteristics	Count (n)	Percent (%)
Sex		
Male	54	34%
Female	102	64%
Education		
Middle school	0	0
High school	22	14%
Some college	43	27%
College degree	55	35%
Other	37	22%
Cancer Type		
Blood	6	3.8%
Breast	69	43.9%
Colon and gastrointestinal	20	12.7%
Gynecological	9	5.7%
Head, neck, and throat	10	6.4%
Lung	10	6.4%
Lymphoma	12	7.6%
Other and rare	4	2.5%
Prostate and male	11	7%
Sarcoma	4	2.5%
Unknown	2	1.3%
Clinical Stage		
Stage 0	2	1.3%
Stage I	35	22.3%
Stage II	26	16%
Stage III	30	19%
Stage IV	28	17.8%
Other/Unknown	5	3.2%
Level of Functional Impairment in Daily Activities		
Not limited at all	91	58%
Somewhat limited	62	39%
Bed rest more than 50% of the time	2	1%
Total bed rest	0	0%
Years Since Diagnosis		
0-5	111	70%
6-10	24	15%
11-15	9	5%
16+	4	2%

Table 2 Conventional cancer treatment.

Treatment Type	Previous (n)	Previous (%)	Current/Future (n)	Current/Future (%)
Surgery	95	60%	12	8%
Chemotherapy	106	67%	51	32%
Hormone Therapy	52	33%	39	25%
Radiation	65	41%	12	8%
Palliative Care	9	6%	7	4%

3.2 Participant CIM Use

Over half of the participants reported lifetime CIM use (62%; 95% CI: 54–69), whereas nearly half indicated current CIM use (49%; 95% CI: 41–57). Among current users, participants reported engaging in an average of 2.55 different CIM modalities. Among individual modalities, vitamins (34%; 95% CI: 27–41), minerals (17%; 95% CI: 12–24), and cannabis (15%; 95% CI 10–22) were the most frequently reported herbal supplements, and massage therapy was the most common manipulative practice (22%; 95% CI: 16–29). Use of all three modalities (i.e., herbal supplements, mind-body practices, and manipulative and body-based practices) was reported by 9% of participants, while manipulative and body-based practices were reported by 7% of participants. Frequencies are detailed in Table 3 and provide context for the aggregated CIM modality groups examined in subsequent analyses.

Table 3 Complementary integrative medicine.

CIM Modality Type	CIM Modality	Count (n)	Percent (%)
Herbal Supplements	Vitamins	53	33%
	Minerals	27	17%
	Multi Vitamin	26	17%
	Cannabis	24	15%
	Herbs	13	8%
	Ginseng	6	3%
	Astragalus	4	2%
Mind-Body Practices	Yoga	12	8%
	Tai Chi	4	2%
	Qi Gong	0	0%
Manipulative and Body-Based Practices	Massage Therapy	34	21%
	Acupuncture	17	11%
	Chiropractic	12	7%

NOTE: CIM = Complementary integrative medicine.

3.3 Associations among Demographic and Clinical Characteristics and CIM Modality

There were no relationships between CIM modality group and age ($p = 0.088$), sex ($p = 0.261$), functional impairment ($p = 0.156$), cancer stage ($p = 0.239$), present and future conventional treatment ($p = 0.605$), and past conventional treatment ($p = 0.947$). Additionally, no significant

associations were observed between CIM modality group and cancer stage (p = 0.076) or current CIM use and education (p = 0.521).

Pearson's chi-squared test indicated a significant association between CIM modality group and education level ($\chi^2(12, N = 161) = 22.43$, p = 0.033). Participants with higher education levels (i.e., some college, college degree, and graduate degree) were more likely to use a combination of CIM modalities, such as herbal supplements and manipulative and body-based practices, or all three modalities, while those with lower education levels predominantly reported using single modalities, such as herbal supplements alone. Additionally, education level was significantly associated with both past and current use of CIM, such that participants with higher education levels were more likely to have used CIM in the past (p = 0.039) and to be currently using CIM (p = 0.007).

There was a significant association between CIM group and cancer type ($\chi^2(40, N = 161) = 58.42$, p = 0.030). Among breast cancer survivors, 37% reported CIM use and 67% of users reported engaging in a combination of herbal supplements and manipulative and body-based practices. Among colon and gastrointestinal cancer survivors, 70% reported CIM use and 21% of users reported specific engagement in herbal supplements. Half (50%) of blood cancer survivors reported using herbal supplements, and 58% of lymphoma survivors and 64% of prostate cancer survivors used a combination of herbal supplements and body-based practices. Manipulative and body-based practices were less commonly reported, with the highest use among breast cancer survivors (18.2%) and lymphoma survivors (9.1%). Among CIM modalities used, vitamins, massage therapy, and cannabis were more common among participants using multiple CIM modalities (all $p < 0.05$). Participants' reasons for CIM use are reported in Table 4.

Table 4 Reasons for complementary integrative medicine use and safety.

Reasons For CIM Use	Count (n)	Percent (%)
Recommended by a family member or friend	10	6%
Recommended by a physician	24	15%
My own decision	31	19%
Other	1	0.6%
A combination of reasons	23	14%
CIM Safety Discussion with Physician		
Yes	68	43%
No	21	13%

NOTE: CIM = Complementary integrative medicine.

4. Discussion

This study examined the prevalence and patterns of CIM use among cancer survivors engaged in structured exercise rehabilitation and we observed that CIM use was common, with 62% reporting lifetime use and nearly half currently using an average of 2.55 modalities, most often herbal supplements and manipulative or body-based practices. These results align with prior survivorship research demonstrating that approximately 43% of cancer survivors actively use CIM and that many initiate use following diagnosis [15, 16]. Notably, our prevalence estimate exceeds the 33% past-year CIM use reported in the nationally representative National Health Interview Survey (NHIS) sample [17], a discrepancy likely explained by differences in measurement window (lifetime vs. past-

year), sample characteristics, and the exercise-rehabilitation context of our cohort. Similar to the NHIS patterns, herbal and manipulative therapies were among the most frequently used modalities (36% and 25%, respectively), but unlike national trends, our participants demonstrated low engagement in mind-body practices such as yoga, tai chi, or meditation [17]. This contrast suggests that program context and referral pathways may influence modality selection among exercise-engaged survivors.

Patterns of modality clustering in our sample, particularly the combined use of herbal supplements and manipulative therapies, align with integrative oncology frameworks, which emphasize the coordinated use of natural products, mind-body, and manipulative or body-based therapies alongside conventional treatment to support symptom management and quality of life [18]. In contrast to broader survivorship cohorts where mind-body practices such as yoga, meditation, or tai chi are more commonly reported [19], participants in our exercise-rehabilitation program demonstrated relatively low engagement in these practices. This pattern may indicate that survivors participating in structured exercise rehabilitation prioritize modalities perceived as directly supporting physical recovery, rather than practices aimed at stress reduction or mind-body integration.

The associations between CIM modalities, education level, and cancer type suggest that sociodemographic and diagnostic characteristics influence how survivors engage with integrative therapies. These patterns align with prior evidence demonstrating that individuals with higher education are more inclined to adopt multiple CIM modalities [20], and that modality preferences can vary by cancer type [21]. Indeed, education appears particularly influential, as CIM users tend to be more educated, middle-aged, and female [22], and higher educational attainment is often accompanied by greater health literacy and better access to healthcare resources [23]. This trend was reflected in our sample, where 15% of participants reported physician recommendations for CIM and 14% accessed multiple informational resources to inform their use. Educational attainment may also influence diagnostic pathways such that individuals with higher education are more likely to participate in screening and preventive care, contributing to earlier cancer detection. Epidemiologic research demonstrates that lower education is associated with higher cancer-related mortality (excess relative risks 1.43–2.38) [24] and greater odds of later-stage diagnosis (Stage II vs. I: odds ratio (OR) = 1.6; Stage III–IV vs. I: OR = 2.3) [25]. These broader patterns may help explain why certain cancer types and CIM behaviors were more common among higher-educated participants in our exercise-based cohort. Notably, 19% of participants reported initiating CIM use by personal choice, a pattern that may similarly reflect greater health literacy or comfort navigating health information.

Preferences for specific CIM modalities varied by cancer type, with breast cancer survivors in our sample demonstrating greater use of herbal and supportive therapies. This pattern aligns with international survivorship data. A survey of oncology patients in Chile and South America observed that 45% of breast cancer survivors used CIM, compared with 65% of patients with other cancers, and with herbal modalities (49%) and vitamins and minerals (41%) being the most common [16]. Similar observations have been reported in Sweden, where vitamins, minerals, and relaxation techniques were the primary CIM methods used among a cohort of 755 cancer patients (64% female; 38% breast cancer) [20]. Although our sample had comparable demographics (64% female; 44% breast cancer), participation in a structured exercise program may have influenced modality choice. Participants may have perceived herbal supplements and manipulative or body-based practices as

more complementary to their physical rehabilitation goals. Indeed, massage therapy (21%) and chiropractic care (7%) were among the most used modalities, suggesting that breast cancer survivors may view these approaches as beneficial for managing musculoskeletal discomfort, exercise-related soreness, and overall recovery.

The substantial overlap in massage, chiropractic care, and acupuncture use suggests that survivors who engage in one body-based therapy often integrate others as part of a holistic symptom-management approach. This clustering aligns with complementary medicine frameworks, which frequently combine manual and energy-based therapies to address musculoskeletal discomfort, chronic pain, and stress-related symptoms [26]. Evidence indicates that these modalities may work synergistically; massage therapy can relieve muscle tension and improve circulation, chiropractic care may enhance structural alignment, and acupuncture can modulate pain and autonomic balance [27]. Such integration reflects a broader patient-centered philosophy of treating the whole person rather than isolated symptoms and supports a more comprehensive therapeutic experience.

There is growing evidence that mechanistic research provides biological context for why some cancer survivors may integrate CIM with exercise rehabilitation to support symptom relief and overall wellness. Exercise is increasingly recognized as a modulator of the tumor microenvironment that can influence lactate signaling, inflammatory pathways, and metabolic crosstalk between tumor and host tissues [28]. Recent reviews further highlight the dual roles of exercise-induced versus tumor-derived lactate in shaping metastatic potential and immune responsiveness, as well as the release of exerkines (e.g., circulating peptides, cytokines, metabolites with anti-inflammatory or anti-tumor properties) that may contribute to treatment tolerance and symptom reduction [29]. Exercise also enhances tumor-specific immune cell activity in breast cancer and improves functional and psychological outcomes in lung cancer [30]. Although our study did not evaluate these mechanistic pathways, such biological insights underscore why survivors participating in exercise rehabilitation may concurrently explore CIM modalities to support symptom management, perceived recovery, or overall wellness within a broader integrative care framework.

Cultural beliefs, psychosocial needs, and personal health philosophies likely contribute to CIM engagement in our cohort and may help explain variability across education levels and cancer types. Prior research suggests that cultural values surrounding natural healing, reliance on familiar or tradition-based remedies, and perceived alignment of CIM with personal health preferences shape modality selection and influence willingness to disclose use to providers [31]. Attitudes such as valuing “natural” cures and expressing distrust in biomedicine have been strongly associated with CIM use [31]. Psychosocial factors may also play an important role. Survivors’ coping styles, perceived control, unmet symptom needs, and desire for active self-management have been linked with CIM engagement across diverse cancer populations [32]. In particular, long-term survivors frequently use CIM to relieve stress, and psychosocial “need” factors such as prior depression, anxiety, or ongoing symptom burden, are significant predictors of use [32]. These contextual influences may help explain patterns observed in our sample, including lower engagement in mind-body practices and differing modality preferences across cancer types and education levels.

Several limitations should be considered when interpreting these findings. The study was conducted in a sample of cancer survivors actively engaged in a structured exercise program, which limits generalizability to survivors who are not participating in rehabilitation or who receive care in different settings. The cross-sectional design further precludes causal inference, and all associations

should be interpreted as correlational rather than indicative of directionality. Selection bias is also a potential concern, as referrals from oncology and rehabilitation providers may have resulted in a sample already inclined toward supportive or health-oriented behaviors, and CIM use patterns among physically active survivors may differ from those in the broader survivor population. Additional methodological constraints stem from the use of an anonymous, self-report survey. Diagnoses, disease characteristics, and CIM use were reported solely by participants and could not be verified through medical records. The survey instrument, adapted from prior CIM research for internal program evaluation [14], was not formally psychometrically validated. Although this practice is consistent with common practices in CIM studies [13], this limits the reliability and comparability of the data. Furthermore, the survey did not capture key demographic and socioeconomic variables such as race/ethnicity, income, employment, and insurance status, all of which are known to influence CIM use. National data indicate that adults with multiple chronic conditions exhibit higher CIM engagement even after adjusting for sociodemographic factors [33], thus underscoring the importance of measuring these characteristics in future research. Safety-related limitations also warrant consideration. Although many CIM modalities used by participants such as vitamins, minerals, herbal supplements, and cannabis are widely accessible, they may carry known risks of herb-drug interactions during chemotherapy, hormone therapy, or immunotherapy [34]. Our survey did not assess perceived safety or adverse events, preventing characterization of potential risks in this cohort. Future studies should incorporate structured safety assessments and adverse-event monitoring to better understand the clinical implications of CIM use in exercise-engaged survivors.

Future research should employ longitudinal, interventional, and mixed-methods designs to build on these findings. Randomized controlled trials could evaluate whether integrating specific CIM modalities such as acupuncture for cancer-related fatigue, massage therapy for musculoskeletal discomfort, or yoga for mood and functional outcomes enhances the effects of structured exercise rehabilitation. Longitudinal cohort studies would help clarify how CIM engagement evolves over the rehabilitation trajectory and whether demographic or clinical factors predict adoption or discontinuation. Mixed-methods approaches, including qualitative interviews, may provide deeper insight into cultural, psychosocial, and informational influences shaping survivors' decisions to incorporate CIM alongside exercise-based care. Such investigations would generate actionable evidence to inform integrative survivorship models and guide safe, patient-centered CIM integration in rehabilitation settings.

5. Conclusions

The present study offers a novel setting of active cancer survivors. CIM use was common among cancer survivors enrolled in a structured exercise program, with herbal supplements and manipulative or body-based practices reported most frequently. Consistent with prior literature, participants were predominantly female and had higher educational attainment, and education level and cancer type were associated with patterns of CIM modality use. However, these associations are descriptive and should not be interpreted as causal or indicative of clinical benefit. Rather, they underscore the need for further research to understand how cancer survivors integrate CIM within exercise rehabilitation and how contextual factors, such as demographics, diagnosis, and access to information, influence modality selection. Future studies should examine the acute and

sustained effects of various CIM modalities in this population to better inform safe, evidence-based integrative survivorship care.

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Author Contributions

Conceptualization LKS, RH; data analysis ER, VF; investigation VF, AR, ER; methodology LKS, RH; project administration VF, AR, ER; resources LKS, RH; software ER; supervision LKS, RH; validation LKS; visualization LKS, RH; writing - original draft VF; writing – review and editing AR, LKS, ER, RH.

Competing Interests

The authors have declared that no competing interests exist.

AI-Assisted Technologies Statement

ChatGPT (OpenAI) was used for minor editorial assistance, including grammar and phrasing. All substantive content was generated, reviewed, and verified by the authors, who take full responsibility for the final manuscript.

Additional Materials

The following additional materials are uploaded at the page of this paper.

1. Supplementary File A.

References

1. National Center for Complementary & Integrative Health. Complementary, alternative, or integrative health: What's in a name? [Internet]. Bethesda, MD: National Center for Complementary & Integrative Health; 2021. Available from: https://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name.
2. Phutrakool P, Pongpirul K. Acceptance and use of complementary and alternative medicine among medical specialists: A 15-year systematic review and data synthesis. Syst Rev. 2022; 11: 10.
3. Raiber L, Raff C, Thiele J, Kramer K. Integrative nursing interventions for cancer-related symptoms in oncology inpatients: Results of a descriptive pilot study. Integr Cancer Ther. 2024; 23: 15347354241239930.
4. Emami SA, Khajeh-Mehrizi A, Safaee-Nodehi SR, Dabiri MR, Emami SA. Complementary and alternative medicine among adult cancer patients: A cross-sectional study. Holist Nurs Pract. 2025; 39: 80-85.

5. Keene MR, Heslop IM, Sabesan SS, Glass BD. Perspectives of complementary and alternative medicine use by cancer patients in a regional hospital in North Queensland, Australia. Complement Ther Med. 2022; 71: 102879.
6. Ng JY, Wieland LS, Lee MS, Liu JP, Witt CM, Moher D, et al. Open science practices in traditional, complementary, and integrative medicine research: A path to enhanced transparency and collaboration. Integr Med Res. 2024; 13: 101047.
7. Powell CB, Dibble SL, Dall'Era JE, Cohen I. Use of herbs in women diagnosed with ovarian cancer. Int J Gynecol Cancer. 2002; 12: 214-217.
8. Balneaves LG, Kristjanson LJ, Tataryn D. Beyond convention: Describing complementary therapy use by women living with breast cancer. Patient Educ Couns. 1999; 38: 143-153.
9. Abusanad A, Ujaimi R, Alotaibi MA, Alharbi LA, Alatawi N, Algarni AA, et al. Exploring integrative approaches: Insights into complementary medicine practices among breast cancer survivors in Saudi Arabia. Cureus. 2024; 16: e52282.
10. Murillo R, Pinto-Martínez N, Serrano N, Uribe C, Navarro E, Duque J, et al. Use of complementary and alternative medicine by cancer patients in Colombia. BMC Complement Med Ther. 2023; 23: 321.
11. Wolf M, Emberger-Klein A, Menrad K. Factors influencing the use of natural health products, in particular for concentration and cognition in Germany. BMC Complement Med Ther. 2024; 24: 103.
12. Brown JM, Shackelford DY, Hipp ML, Hayward R. Evaluation of an exercise-based phase program as part of a standard care model for cancer survivors. Transl J Am Coll Sports Med. 2019; 4: 45-54.
13. Horneber M, Bueschel G, Dennert G, Less D, Ritter E, Zwahlen M. How many cancer patients use complementary and alternative medicine: A systematic review and metaanalysis. Integr Cancer Ther. 2012; 11: 187-203.
14. Wanchai A. Complementary and alternative medicine use among women with breast cancer: A systematic review. Clin J Oncol Nurs. 2010; 14: E45-E55.
15. Mao JJ, Palmer CS, Healy KE, Desai K, Amsterdam J. Complementary and alternative medicine use among cancer survivors: A population-based study. J Cancer Surviv. 2011; 5: 8-17.
16. Lopez G, Salas CA, Cadiz F, Barriga C, Gonzalez P, Acevedo S, et al. Complementary and integrative medicine use in individuals seeking conventional medical oncology care in Chile: Prevalence and patient characteristics. J Glob Oncol. 2019; 5. doi: 10.1200/JGO.18.00190.
17. 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.
18. Mao JJ, Pillai GG, Andrade CJ, Ligibel JA, Basu P, Cohen L, et al. Integrative oncology: Addressing the global challenges of cancer prevention and treatment. CA Cancer J Clin. 2022; 72: 144-164.
19. Mishra KK, Victorson D, Mehta DH, Vago DR. Personalized mind–body medicine in integrative oncology: Meeting the moment with each patient. J Integr Complement Med. 2022; 28: 457-462.
20. Wode K, Henriksson R, Sharp L, Stoltenberg A, Hök Nordberg J. Cancer patients' use of complementary and alternative medicine in Sweden: A cross-sectional study. BMC Complement Altern Med. 2019; 19: 62.

21. Yalcin S, Hurmuz P, McQuinn L, Naing A. Prevalence of complementary medicine use in patients with cancer: A Turkish comprehensive cancer center experience. J Glob Oncol. 2017; 4. doi: 10.1200/JGO.2016.008896.
22. Bishop FL, Lewith GT. Who uses CAM? A narrative review of demographic characteristics and health factors associated with CAM use. Evid Based Complementary Altern Med. 2010; 7: 11-28.
23. Hahn RA, Truman BI. Education improves public health and promotes health equity. Int J Health Serv. 2015; 45: 657-678.
24. Albano JD, Ward E, Jemal A, Anderson R, Cokkinides VE, Murray T, et al. Cancer mortality in the United States by education level and race. J Natl Cancer Inst. 2007; 99: 1384-1394.
25. Eriksson H, Lyth J, Månsson-Brahme E, Frohm-Nilsson M, Ingvar C, Lindholm C, et al. Low level of education is associated with later stage at diagnosis and reduced survival in cutaneous malignant melanoma: A nationwide population-based study in Sweden. Eur J Cancer. 2013; 49: 2705-2716.
26. Voss ME, Sandquist L, Otremba K, Kreitzer MJ. Integrative nursing: A framework for whole-person mental health care. Creat Nurs. 2023; 29: 23-41.
27. Zhang YL, Mao JJ, Li QS, Weitzman M, Liou KT. Battlefield acupuncture for chronic musculoskeletal pain in cancer survivors: A novel care delivery model for oncology acupuncture. Front Pain Res. 2023; 4: 1279420.
28. Hojman P, Gehl J, Christensen JF, Pedersen BK. Molecular mechanisms linking exercise to cancer prevention and treatment. Cell Metab. 2018; 27: 10-21.
29. Zolfaghari G, Basereh A, Daud DM, Khoramipour K. Context matters: Divergent roles of exercise-induced and tumor-derived lactate in cancer. Biomolecules. 2025; 15: 1010.
30. Toohey K, Mizrahi D, Hart NH, Singh B, Lopez P, Hunter M, et al. Exercise in cancer care for people with lung cancer: A narrative synthesis. J Sci Med Sport. 2025; 28: 16-25.
31. Zörgő S, Peters GJ, Mkhitaryan S. Attitudes underlying reliance on complementary and alternative medicine. Integr Cancer Ther. 2020; 19: 1534735420910472.
32. Sohl SJ, Weaver KE, Birdee G, Kent EE, Danhauer SC, Hamilton AS. Characteristics associated with the use of complementary health approaches among long-term cancer survivors. Support Care Cancer. 2014; 22: 927-936.
33. Falci L, Shi Z, Greenlee H. Multiple chronic conditions and use of complementary and alternative medicine among US adults: Results from the 2012 National Health Interview Survey. Prev Chronic Dis. 2016; 13: E61.
34. Yeung KS, Gubili J, Mao JJ. Herb-drug interactions in cancer care. Oncology. 2018; 32: 516-520.