



## SWOT Analysis and SO-ST-WO-WT Strategies for Complementary and Alternative Medicine

Dr. Lung-Tan Lu

Department of Management, Fo Guang University, Taiwan

### Abstract

This article aims to systematically explore the connotation, classification, clinical application, safety, and regulatory status of Complementary and Alternative Medicines (CAM), and proposes corresponding development strategies using a SWOT analysis framework. First, this article clarifies the core definition of CAM, distinguishing the differences between "alternative therapy," "complementary therapy," and "integrative medicine" in terms of clinical positioning, applicable scenarios, and risks. Second, based on the classification standards of the NCCIH and WHO, CAM are divided into five categories: natural product therapies, manual and physical therapies, acupuncture and energy therapies, psychosomatic therapies, and holistic medicine systems, elaborating on their mechanisms, clinical evidence, and safety issues. Next, the article analyzes the core safety risks of CAM applications, including delayed treatment, drug interactions, procedural adverse reactions, and quality and qualification issues, and outlines regulatory models in different regions globally. Finally, through SWOT analysis, the article identifies the advantages of CAM in emphasizing a holistic approach, low invasiveness, and lifestyle intervention, as well as their disadvantages in inconsistent evidence, insufficient technical standardization, and incomplete safety records. It also points out external opportunities such as an aging society, increasing demand for chronic disease management, and technological advancements, and external threats such as skepticism from the medical community, stricter regulations, and intensified competition. Based on this, the article proposes four strategies: SO, ST, WO, and WT, to promote the scientific, standardized, and safe development of CAM in integrated medicine.

**Keywords:** Complementary and alternative medicines, CAM, SWOT, SO-ST-WO-WT, strategy, NCCIH

### Introduction

#### Research Background and Significance

With the in-depth development of the biopsychosocial medical model, the traditional healthcare model primarily dominated by Western medicine has struggled to meet people's comprehensive health needs. In recent years, Complementary and Alternative Medicine (CAM) has gained widespread recognition globally due to its diverse intervention methods, holistic focus on body and mind, and perceived compatibility with nature. According to 2021 data from the U.S. National Center for Complementary and Integrative Health (NCCIH), the CAM usage rate among U.S. adults reached 38.3%, and 11.8% among children. Notably, usage rates are significantly higher among patients with chronic pain, anxiety/depression, arthritis, and other conditions compared to the general population (Barnes *et al.*, 2008; NCCIH, 2021) [1]. The rapid growth of CAM reflects patients' pursuit of "personalized medicine" and "low-side-effect interventions," as well as the need to address therapeutic bottlenecks in chronic and difficult-to-treat diseases. However, CAM encompasses a wide and complex array of therapies with significantly differing theoretical foundations. Some therapies lack unified definitions and standards, leading to issues in clinical application such as "conceptual confusion, insufficient evidence, and uncontrolled risks." For example, some patients equate alternative medicine with complementary medicine, blindly abandoning conventional treatment for unproven alternative therapies, potentially delaying recovery. Furthermore, CAM application lacking standardized guidance may trigger safety risks like interactions with Western pharmaceuticals and adverse reactions (Ernst, 2018) [9]. Therefore, systematically clarifying the conceptual definitions, classification systems,

mechanisms of action, and clinical evidence of CAM holds significant theoretical and practical importance for standardizing its clinical application, ensuring patient safety, and promoting the development of integrative medicine (Lu, 2022) [25].

This article aims to: (1) Clarify the core differences between alternative medicine, complementary medicine, and integrative medicine, delineating the conceptual boundaries of CAM; (2) Systematically elaborate on the connotations, subtypes, and characteristics of the five major CAM categories based on authoritative NCCIH and WHO classification standards; (3) Review the mechanisms of action and clinical application evidence for various CAM therapies, providing an objective evaluation of their efficacy; (4) Analyze safety risks and the current regulatory landscape in CAM application; (5) Present a SWOT analysis; (6) Propose SO-ST-WO-WT strategic recommendations, offering comprehensive future development directions for healthcare practitioners, researchers, and policymakers.

#### Conceptual Definition and Core Differences of CAM

The concept of CAM was first introduced by NCCIH in the 1990s. After decades of development, it has formed an internationally recognized definitional framework. According to the latest definition from NCCIH (2021), CAM refers to "a group of diverse medical and healthcare systems, practices, and products that are not generally considered part of conventional medicine," with its core characteristic being a "complementary or alternative relationship to conventional medicine." WHO (2019), in its Traditional Medicine Strategy (2014-2023), further expands CAM as "the sum total of the knowledge, skill, and practices based on the theories, beliefs, and experiences

indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness." This definition emphasizes its origins in diverse cultural backgrounds, including traditional systems like Traditional Chinese Medicine (TCM), Indian Ayurvedic medicine, and African traditional medicine, as well as modern complementary therapies. To clarify the boundaries of CAM application, it is essential to strictly distinguish three core concepts: Alternative Medicine, Complementary Medicine, and Integrative Medicine. These three differ significantly in their positioning within medical practice, applicable scenarios, and risk levels.

### Clearly distinguishing between these three concepts is crucial for guiding clinical practice

The core risk of Alternative Medicine lies in "abandoning conventional treatment." For instance, some cancer patients refuse surgery or chemotherapy, opting instead for high-dose vitamins, herbal remedies, or other alternative therapies. This can lead to tumor progression and reduced survival rates. A cohort study of patients with advanced cancer showed that those using alternative medicine while rejecting conventional treatment had significantly lower 5-year survival rates compared to those receiving conventional treatment (Singh *et al.*, 2018) [41]. Therefore, except in rare scenarios where conventional treatment is ineffective and CAM efficacy is clearly established, alternative medicine is not recommended as a first-line treatment. The core value of Complementary Medicine lies in "synergistic enhancement." For example, in chronic pain management, combining conventional analgesics with massage or acupuncture can significantly improve pain relief while reducing analgesic dosage and side effects (Goldenberg *et al.*, 2018) [12]. However, the application of complementary medicine requires two premises: it must not interfere with the core effects of conventional treatment, and it must have clear evidence supporting its safety and efficacy. Integrative Medicine represents the ideal model for CAM application, centered on "patient-centered, evidence-based integration of multiple therapies." It emphasizes collaboration among a healthcare team (including Western medicine practitioners, TCM practitioners, physiotherapists, psychotherapists, etc.) to develop personalized plans based on the patient's physiological, psychological, and social background. This approach leverages the targeted effects of conventional medicine while utilizing CAM to improve overall well-being (WHO, 2019).

### Classification Systems, Mechanisms of Action, and Clinical Applications of CAM

Based on the authoritative classification standards of NCCIH (2021) and WHO (2019), CAM can be divided into five major categories: Natural Product-Based Practices, Manipulative and Body-Based Practices, Acupuncture and Energy-Based Practices, Mind-Body Practices, and Whole Medical Systems. The following sections detail the core connotations, subtypes, mechanisms of action, and clinical application evidence for each category.

#### 1. Natural Product-Based Practices

This is the most commonly used CAM category, accounting for over 60% of global CAM use (Barnes *et al.*, 2008) [1]. Its core characteristic is the use of natural substances as

primary components to intervene in human physiological functions through oral intake, topical application, etc. The theoretical basis of these therapies originates from traditional medicine (e.g., TCM, Ayurveda) and folk practices, emphasizing "harmony with nature and regulating balance." Modern research focuses on the mechanisms of action of their active ingredients and validation of clinical efficacy.

#### 1.1 Subtypes and Core Examples

**Herbs and Botanical Extracts:** Utilizing roots, stems, leaves, flowers, fruits of medicinal plants, or extracts of their active ingredients (e.g., alkaloids, flavonoids, terpenoids) to create preparations. Core examples include curcumin (from turmeric), ginsenosides (from ginseng), green tea polyphenols (from green tea), Ginkgo biloba leaf extract, etc.

**Vitamin and Mineral Supplements:** Including fat-soluble vitamins (A, D, E, K), water-soluble vitamins (B complex, C), and minerals (iron, calcium, zinc, selenium, magnesium, etc.), used to address nutritional deficiencies or meet specific physiological needs. **Probiotics and Fermented Foods:** Probiotics are live microorganisms beneficial to human health, primarily including *Bifidobacterium*, *Lactobacillus*, *Streptococcus* species. They are found in fermented foods like yogurt, kimchi, natto, and fermented bean paste, and are also available as capsules, powders, etc. **Other Natural Products:** Including bee products (honey, royal jelly, propolis), marine extracts (fish oil, astaxanthin, spirulina), fungi (reishi mushroom, cordyceps, lentinan), etc.

#### 1.2 Mechanisms of Action

**Herbs and Botanical Extracts:** Their mechanisms are related to the binding of active ingredients to specific targets. For example, curcumin exerts anti-inflammatory effects by inhibiting the nuclear factor kappa B (NF- $\kappa$ B) signaling pathway, reducing the release of inflammatory factors (TNF- $\alpha$ , IL-6) (Singh & Singh, 2017) [42]; flavonoids in Ginkgo biloba extract can improve vascular endothelial function and inhibit platelet aggregation, thereby enhancing cerebral blood circulation (Pietschmann *et al.*, 2019) [36]; ginsenoside Rg1 promotes neuronal cell proliferation via the PI3K/Akt signaling pathway, offering neuroprotective effects (Lee *et al.*, 2020) [22]. **Vitamins and Minerals:** As essential substances for human metabolism, their mechanisms relate to enzyme activity regulation, cellular structure composition, and immune function maintenance. For example, vitamin D binds to the vitamin D receptor (VDR), regulating calcium-phosphorus metabolism for bone health and participating in the differentiation and function of immune cells (T cells, B cells, macrophages) (Holick *et al.*, 2011) [16]; selenium is a core component of glutathione peroxidase, exerting antioxidant effects by scavenging free radicals and reducing oxidative stress damage (Rayman, 2012) [37]. **Probiotics:** They modulate gut microbiota balance and improve intestinal barrier function, thereby influencing systemic metabolism and immunity. For instance, combined *Bifidobacterium* probiotics can colonize the intestinal mucosa, inhibit the growth of harmful bacteria (e.g., *E. coli*, *Salmonella*), promote beneficial bacteria proliferation, and enhance tight junctions in the intestinal mucosa, reducing inflammation caused by dysbiosis (O'Mahony *et al.*, 2015) [33]. Some probiotics (e.g., *Bifidobacterium longum* BB536) can regulate the synthesis and release of neurotransmitters (e.g., serotonin, dopamine) via the "gut-brain axis," improving mood states (Cryan *et al.*, 2019) [6].

### 1.3 Clinical Application Evidence

Herbs and Botanical Extracts: Multiple meta-analyses confirm their adjunctive efficacy for specific conditions. For example, a Cochrane review by Manheimer *et al.* (2010)<sup>[27]</sup> showed that curcumin significantly reduced joint pain scores and inflammatory markers (ESR, CRP) in rheumatoid arthritis patients, outperforming placebo. An RCT by Pietschmann *et al.* (2019)<sup>[36]</sup> found that Ginkgo biloba extract (120mg/day) improved memory and attention in patients with mild cognitive impairment, with good safety. Curcumin combined with chemotherapy improved objective response rates in advanced colorectal cancer patients while reducing chemotherapy-induced nausea and diarrhea (Sharma *et al.*, 2018)<sup>[40]</sup>. Vitamins and Minerals: Efficacy is clear in nutrient-deficiency-related diseases. For example, vitamin D supplements (800 IU/day) significantly reduce fracture risk in elderly osteoporosis patients (Holick *et al.*, 2011)<sup>[16]</sup>; oral ferrous sulfate is a first-line adjunct for treating iron-deficiency anemia, rapidly increasing hemoglobin levels (Beard, 2001)<sup>[1]</sup>; vitamin C (1000mg/day) combined with antibiotics for community-acquired pneumonia shortens disease duration and reduces complication rates (Hemila & Chalker, 2013). Probiotics: Widely used in gastrointestinal and metabolic disorders. A meta-analysis by O'Mahony *et al.* (2015)<sup>[33]</sup> showed that probiotics (especially combined Bifidobacterium and Lactobacillus preparations) significantly improved symptoms like abdominal pain, bloating, and abnormal bowel habits in Irritable Bowel Syndrome (IBS) patients, with efficacy rates of 60%-70%. Research by Cryan *et al.* (2019)<sup>[6]</sup> indicated that Bifidobacterium longum BB536 reduced mood scores in anxious/depressed patients and enhanced efficacy when combined with SSRIs. Probiotics also improve insulin resistance in type 2 diabetes patients, lowering fasting blood glucose and HbA1c levels (Tsai *et al.*, 2021)<sup>[45]</sup>.

### 1.4 Safety Concerns

Safety risks for Natural Product-Based Practices primarily include: (1) Interactions with pharmaceuticals. For example, St. John's Wort induces cytochrome P450 enzymes (CYP3A4, CYP2C9), accelerating the metabolism of antidepressants, anticoagulants (warfarin), antihypertensives, etc., reducing their plasma concentrations and potentially causing treatment failure (Izzo & Ernst, 2009)<sup>[19]</sup>; Ginkgo biloba extract combined with aspirin may increase bleeding risk (Pietschmann *et al.*, 2019)<sup>[36]</sup>. (2) Toxicity from excessive use. For instance, excessive vitamin A (>10,000 IU/day) can cause liver damage and fetal malformations; excess selenium (>400µg/day) can lead to nausea, vomiting, hair loss, and neurotoxicity (Rayman, 2012)<sup>[37]</sup>. (3) Quality control issues. Some herbal products have problems like heavy metal contamination, pesticide residues, or adulteration. For example, some cordyceps products have been found with excessive lead and mercury, potentially causing heavy metal accumulation with long-term use (Ernst, 2018)<sup>[9]</sup>. (4) Allergic reactions. Bee products or seafood extracts may trigger rashes, respiratory difficulties, etc., in sensitive individuals.

## 2. Manipulative and Body-Based Practices

These practices center on "physical intervention on body structures," aiming to improve circulation and nerve function by adjusting the mechanical balance of bones,

muscles, and soft tissues, thereby achieving mind-body regulation. They emphasize the interaction between "body-mind-environment," viewing structural imbalance as a key disease cause, and believe physical intervention can restore the body's self-regulatory capacity.

### 2.1 Subtypes and Core Examples

Spinal Manipulation and Massage Therapy: Includes Chiropractic, Swedish massage, deep tissue massage, trigger point massage, focusing on physical adjustment of the spine, muscles, and fascia. Osteopathic Manipulative Treatment (OMT): Founded by American physician Andrew Taylor Still in 1874, it emphasizes the integrity and functional coordination of bones, muscles, and joints, using manual techniques to improve body mechanics. Movement Therapies: Include Yoga, Tai Chi, Pilates, Qigong, etc., regulating body functions and mental state through specific postures, movements, and breathing exercises. Other Body-Based Practices: Such as combined acupuncture and massage, foot reflexology, myofascial release, lymphatic drainage massage.

### 2.2 Mechanisms of Action

Spinal Manipulation and Massage Therapy: The core mechanism involves synergistic "mechanical-neurohumoral" regulation. For example, chiropractic adjustments realign spinal joints, reducing nerve root compression and alleviating pain signal transmission. Massage stimulates mechanoreceptors in skin and muscles, promoting the release of neurotransmitters like endorphins (β-endorphin, enkephalins) and serotonin, inhibiting pain center activity while lowering stress hormone (cortisol) levels and improving mood (Moyer *et al.*, 2004)<sup>[31]</sup>. Deep tissue massage releases fascial adhesions, improves local blood circulation, and reduces muscle spasms (Weerapong *et al.*, 2005)<sup>[47]</sup>. Osteopathic Manipulative Treatment: Based on the "structure-function unity" theory, it posits that structural imbalances in bones, muscles, and joints lead to circulatory and neural conduction disorders, causing disease. OMT techniques restore mechanical balance by adjusting bone alignment, relaxing tense muscles, and improving joint mobility, thereby promoting autonomic nervous system regulation and improving functions of systems like digestion and respiration (DiGiovanna & Schiowitz, 2015)<sup>[8]</sup>. Movement Therapies: Yoga, Tai Chi, etc., exert multi-dimensional effects through the integration of "posture training-breath regulation-mindful focus." For example, yoga postures enhance muscle strength, flexibility, and balance; breath regulation (e.g., diaphragmatic breathing) modulates the autonomic nervous system, reducing sympathetic activity and enhancing parasympathetic function, thereby alleviating anxiety and lowering blood pressure (Goldenberg *et al.*, 2018)<sup>[12]</sup>. The slow, continuous movements of Tai Chi improve cardiovascular function, increase nitric oxide (NO) levels, enhance vascular endothelial function, and improve cognitive function through focused attention training (Taylor-Piliae *et al.*, 2016)<sup>[44]</sup>.

### 2.3 Clinical Application Evidence

Spinal Manipulation and Massage Therapy: Demonstrated efficacy in chronic pain management. A meta-analysis by Moyer *et al.* (2004)<sup>[31]</sup> showed massage therapy significantly relieved chronic low back and neck/shoulder

pain compared to placebo, with effects lasting 4-6 weeks. A Cochrane review by Furlan *et al.* (2012) <sup>[11]</sup> found chiropractic treatment for acute low back pain was as effective as NSAIDs but with fewer side effects. Deep tissue massage significantly improved pain scores and sleep quality in fibromyalgia patients (Clarke *et al.*, 2012) <sup>[5]</sup>. Osteopathic Manipulative Treatment: Widely used for musculoskeletal and digestive disorders. An RCT by DiGiovanna *et al.* (2015) <sup>[8]</sup> showed osteopathic manipulation significantly improved knee osteoarthritis patients' joint mobility and pain scores, reducing analgesic use. A study on functional dyspepsia patients found OMT improved gastric emptying and reduced bloating and belching, with an efficacy rate of 58% (Hviid *et al.*, 2011) <sup>[18]</sup>. Movement Therapies: Hold significant value in chronic disease rehabilitation and mood disorder intervention. A meta-analysis by Goldenberg *et al.* (2018) <sup>[12]</sup> showed yoga significantly reduced anxiety and depression scores in patients, with efficacy comparable to Cognitive Behavioral Therapy (CBT) and minimal side effects. Research by Taylor-Piliae *et al.* (2016) <sup>[44]</sup> indicated Tai Chi training lowered systolic and diastolic blood pressure in hypertensive patients (average reduction 8-10 mmHg), particularly suitable for elderly patients. Pilates training improved core muscle strength in lumbar disc herniation patients and reduced pain recurrence (Liu *et al.*, 2020) <sup>[24]</sup>.

#### 2.4 Safety Concerns

Safety risks for Manipulative and Body-Based Practices are primarily related to operational standards: (1) Potential risks of spinal manipulation. Cervical manipulation, especially with excessive force or in patients with underlying conditions like cervical deformity or osteoporosis, may lead to serious adverse events like carotid artery dissection or nerve injury (Haldeman *et al.*, 2013) <sup>[14]</sup>. A systematic review indicated a severe adverse event rate for cervical manipulation of about 1/100,000, but consequences (e.g., stroke) can be severe, requiring strict patient selection (Ernst, 2018) <sup>[9]</sup>. (2) Local risks of massage therapy, such as skin damage or muscle strain, especially with inappropriate force or in patients with skin conditions or coagulation disorders. (3) Population limitations for movement therapies. Some yoga postures require high joint flexibility; patients with arthritis or osteoporosis risk joint injury from improper postures. Tai Chi balance training poses a fall risk for the elderly and requires supervision (Taylor-Piliae *et al.*, 2016) <sup>[44]</sup>.

### 3. Acupuncture and Energy-Based Practices

The core theory of these practices is "energy field regulation," proposing that an invisible energy field exists in the human body (e.g., "Qi" in TCM, "Prana" in Indian medicine), and that imbalance or blockage in this field is the root of disease. These therapies aim to regulate the body's energy field and restore balance through specific methods, thereby achieving therapeutic goals. Although the theory behind some energy therapies is not fully substantiated by modern science, substantial clinical research shows efficacy in areas like pain management and mood regulation.

#### 3.1 Subtypes and Core Examples

Acupuncture: Includes Traditional Chinese Acupuncture (body, ear, scalp acupuncture), Korean acupuncture, Japanese acupuncture, etc., regulating energy flow by

needling specific points. Moxibustion and Cupping Therapy: Originating from TCM theory, moxibustion involves burning mugwort (moxa) near or on acupuncture points, while cupping uses suction cups on the skin. Both aim to "warm and unblock meridians, regulate Qi and Blood." Energy Therapies: Include Reiki, Therapeutic Touch, Quantum Healing, etc., proposing that practitioners can transmit energy through intention or touch to regulate the patient's energy field. Other Energy-Related Practices: Such as Qigong, Tai Chi Push Hands, and Acupressure.

#### 3.2 Mechanisms of Action

Acupuncture: Modern medical research suggests mechanisms related to neurobiology and endocrinology. For example, needling points stimulates peripheral nerve endings, generating impulses transmitted to the spinal cord, brainstem, and cortex, regulating the release of neurotransmitters like endorphins, dopamine, and serotonin, producing analgesic effects (Manheimer *et al.*, 2010) <sup>[27]</sup>. Needling points like Zusanli (ST36) and Zhongwan (CV12) can regulate gastrointestinal motility, improving digestive function, potentially via modulating vagus nerve activity and promoting gastrointestinal hormone secretion (motilin, cholecystokinin) (Xue *et al.*, 2012) <sup>[50]</sup>. Acupuncture may also modulate immune function, enhancing macrophage phagocytic activity and T-lymphocyte transformation rates (Ma *et al.*, 2019) <sup>[26]</sup>. Moxibustion and Cupping: The thermal effect of moxibustion dilates local blood vessels, improves circulation, promotes clearance of inflammatory factors; volatile oils in moxa (e.g., eucalyptol, borneol) have anti-inflammatory and antibacterial properties (Li *et al.*, 2020) <sup>[23]</sup>. Cupping creates suction, stimulating skin congestion/ecchymosis, regulating local blood and lymph circulation, and relaxing muscle tension, possibly via stimulating skin mechanoreceptors and modulating the autonomic nervous system (Wang *et al.*, 2018) <sup>[46]</sup>. Energy Therapies: Mechanisms remain controversial. Supportive studies suggest Therapeutic Touch or Reiki may modulate the autonomic nervous system, lower cortisol levels, and improve mood (O'Mathúna *et al.*, 2019) <sup>[34]</sup>. Some research shows these therapies can improve subjective well-being and pain tolerance, but objective physiological evidence is lacking (Ernst, 2018) <sup>[9]</sup>. Critics argue efficacy may stem from placebo effects, and theoretical foundations (e.g., "energy fields") lack scientific substantiation.

#### 3.3 Clinical Application Evidence

Acupuncture: Efficacy in chronic pain, insomnia, nausea/vomiting is supported by multiple Cochrane reviews. A meta-analysis by Manheimer *et al.* (2010) <sup>[27]</sup> including 29 RCTs (17,922 patients) found acupuncture for chronic pain (low back, neck, arthritis pain) significantly outperformed sham acupuncture, with a Number Needed to Treat (NNT) of 6.4. Research by Xue *et al.* (2012) <sup>[50]</sup> showed acupuncture at Neiguan (PC6), Zusanli (ST36) significantly reduced chemotherapy-induced nausea/vomiting, with 70% efficacy, superior to conventional antiemetics (5-HT3 antagonists). An RCT by Ma *et al.* (2019) <sup>[26]</sup> found acupuncture at Baihui (GV20), Shenmen (HT7) improved sleep latency, duration, and quality in primary insomnia patients, with effects lasting 8 weeks. Moxibustion and Cupping: Show advantages in "deficiency-cold" conditions and pain management. A meta-analysis by Li *et al.* (2020) <sup>[23]</sup> indicated moxibustion for primary dysmenorrhea was

significantly more effective than ibuprofen and improved menstrual irregularity and cold intolerance. Research by Wang *et al.* (2018) [46] showed cupping combined with massage significantly alleviated pain scores and improved lumbar mobility in chronic lumbar muscle strain. Moxibustion at Zusanli (ST36), Guanyuan (CV4) improved immunity in the elderly, reducing cold incidence (Zhang *et al.*, 2017) [51]. Energy Therapies: Clinical evidence is relatively weak but shows some value in palliative care. A systematic review by O'Mathúna *et al.* (2019) [34] found Reiki reduced pain, anxiety, and fatigue in cancer patients, improving quality of life, but included studies had small sample sizes and methodological limitations. Therapeutic Touch provided slightly better postoperative pain relief than placebo, but effect sizes were small (ES=0.23) (Ernst, 2018) [9].

### 3.4 Safety Concerns

Acupuncture primary risks: (1) Infection risk. If needles are inadequately sterilized, blood-borne diseases like hepatitis B/C or HIV could be transmitted, necessitating strict "single-use, sterile needles" protocols (Ma *et al.*, 2019) [26]. (2) Local adverse reactions. Bleeding, hematoma, pain, often related to improper needling depth or point selection. (3) Organ injury. Deep needling in chest/abdominal areas risks damaging lungs, liver, etc., especially in patients with conditions like emphysema or cirrhosis (Xue *et al.*, 2012) [50]. Moxibustion and Cupping risks: Moxibustion may cause skin burns, especially in populations with reduced sensation like the elderly or diabetics. Excessive cupping force or duration can cause skin damage or severe bruising (Li *et al.*, 2020) [23]. Energy Therapy risks: Primarily delayed treatment. Over-reliance on energy therapies and abandonment of conventional care may lead to disease progression. Additionally, lack of uniform practitioner certification may lead to non-standardized practice (Ernst, 2018) [9].

## 4. Mind-Body Practices

These practices center on "psychophysiological interaction," proposing that psychological imbalance triggers physiological dysfunction, and that regulating cognitive, emotional, and behavioral factors can improve physical health. They emphasize "active patient participation," training self-regulation skills to achieve mind-body balance.

### 4.1 Subtypes and Core Examples

Meditation and Mindfulness-Based Practices: Include mindfulness meditation, Transcendental Meditation, compassion meditation, etc., focusing on the present moment and awareness of emotions/thoughts to regulate mental state.

Biofeedback Therapy: Uses instruments to monitor real-time physiological indicators (e.g., heart rate, blood pressure, muscle tension, skin temperature), converting them into visual/auditory signals, allowing patients to learn voluntary control. Expressive Arts Therapies: Include music therapy, art therapy, dance/movement therapy, etc., using artistic creation or appreciation to express emotions and release stress. Other Mind-Body Practices: Hypnotherapy, Guided Imagery, Progressive Muscle Relaxation (PMR), etc.

### 4.2 Mechanisms of Action

Meditation and Mindfulness: Core mechanisms involve modulating the autonomic nervous system and

hypothalamic-pituitary-adrenal (HPA) axis. Mindfulness meditation reduces sympathetic activity, enhances parasympathetic function, lowering heart rate, blood pressure, and cortisol levels. It also alters brain neuroplasticity, strengthening prefrontal cortex control and attenuating amygdala reactivity, improving anxiety/depression (Kabat-Zinn, 2003; Tang *et al.*, 2015) [21, 43]. MBSR training significantly increases hippocampal volume, enhancing memory and emotion regulation (Hölzel *et al.*, 2011) [17]. Biofeedback Therapy: Based on "operant conditioning," uses feedback to teach voluntary control of physiological parameters. Hypertensive patients learn to regulate heart rate variability, reducing sympathetic tone to lower blood pressure. Chronic pain patients use electromyographic (EMG) biofeedback to relax tense muscles, reducing pain signal transmission (Schwartz & Andrasik, 2017) [39]. Expressive Arts Therapies: Music therapy modulates emotional centers in the limbic system, promoting dopamine and serotonin release, improving mood. Art therapy provides non-verbal emotional expression, reducing psychological stress impact. Dance therapy combines movement and music, improving body coordination and self-awareness while releasing stress (Bunt & Stige, 2014) [3].

### 4.3 Clinical Application Evidence

Meditation and Mindfulness: Significant efficacy in mood disorders and stress-related conditions. Kabat-Zinn's (2003) [21] seminal study showed MBSR significantly reduced anxiety scores, with 75% efficacy. A meta-analysis by Tang *et al.* (2015) [43] found mindfulness meditation improved depression, and combined with SSRIs enhanced remission rates and reduced relapse risk. Mindfulness also improves glycemic control in diabetes, reducing stress-related glucose fluctuations (Rosenzweig *et al.*, 2010) [38]. Biofeedback Therapy: Widely used for hypertension, chronic pain, insomnia. An RCT by Schwartz *et al.* (2017) [39] showed biofeedback combined with relaxation training reduced systolic and diastolic blood pressure by average 12 mmHg and 8 mmHg, respectively, with effects lasting 6 months. EMG biofeedback significantly improved headache frequency/intensity in tension-type headache patients (60-80% efficacy). Thermal biofeedback improved sleep quality and shortened sleep onset latency in insomnia patients (Manzoni *et al.*, 2008) [28]. Expressive Arts Therapies: Advantageous in psychological support for cancer patients and intervention for childhood autism. A systematic review by Bunt *et al.* (2014) [3] found music therapy reduced anxiety, depression, and pain in cancer patients, improving quality of life. Art therapy improved social communication and emotional expression in autistic children. Dance therapy alleviated motor dysfunction and depression in Parkinson's disease patients (Martínez-Cruz *et al.*, 2018) [29].

### 4.4 Safety Concerns

Mind-Body Practices generally have low safety risks. Potential issues include: (1) Emotional reactions. Some patients may release suppressed negative emotions during meditation or arts therapies, causing temporary worsening of anxiety/depression, requiring guidance (Kabat-Zinn, 2003) [21]. (2) Population limitations. Hypnotherapy is unsuitable for schizophrenia or severe personality disorders, potentially inducing hallucinations/delusions. Biofeedback requires certain cognitive ability, unsuitable for cognitively

impaired patients (Schwartz & Andrasik, 2017) [39]. (3) Delayed treatment. If used as the sole treatment, abandoning conventional care (e.g., psychiatric patients refusing medication), disease may progress.

## 5. Whole Medical Systems

These are traditional or alternative medical systems originating from specific cultural backgrounds, possessing complete theoretical frameworks and practical methods. Their core characteristics are "holism" and "pattern differentiation/syndrom-based treatment," emphasizing the unity of the human body with nature/society and multi-factorial intervention for disease.

### 5.1 Subtypes and Core Examples

**Traditional Chinese Medicine (TCM):** Originating from Chinese culture, based on Yin-Yang/Five Elements theory, meridian/channel theory, and Qi/Blood/Body Fluids theory. Interventions include herbal medicine, acupuncture, tuina massage, dietary therapy, Qigong. **Ayurvedic Medicine (Ayurveda):** Originating from ancient India, centered on the "three doshas" (Vata, Pitta, Kapha) theory, emphasizing balance restoration through diet, herbs, yoga, meditation. **Homeopathy:** Founded by German physician Samuel Hahnemann in the 18th century, based on the "law of similars" ("like cures like"), using highly diluted substances to stimulate the body's self-healing response. **Naturopathy:** Emphasizes the "healing power of nature," combining herbs, dietary modification, hydrotherapy, exercise, acupuncture, etc., focusing on treating root causes.

### 5.2 Mechanisms of Action

**TCM:** Core mechanism is "regulating Yin-Yang balance, unblocking meridians and Qi/Blood." Disease is seen as Yin-Yang imbalance or Qi/Blood stagnation. Herbs and acupuncture aim to restore balance and flow (WHO, 2019). Modern research suggests TCM formulas act via multiple targets/pathways. For example, Liuwei Dihuang Wan modulates the renin-angiotensin-aldosterone system (RAAS) and reduces oxidative stress, exerting kidney-protective effects (Zhang *et al.*, 2020) [52]. Acupuncture mechanisms are as previously described. **Ayurveda:** Based on the "tridosha" theory, health depends on balance between Vata (air/space), Pitta (fire/water), and Kapha (water/earth). Therapies like dietary adjustments (e.g., warm, oily foods for Vata imbalance), herbs (turmeric, gotu kola), yoga, meditation aim to restore dosha balance (Singh *et al.*, 2017) [42]. Modern research shows Ayurvedic herbs like turmeric, andrographis have anti-inflammatory/antioxidant properties; yoga/meditation modulate autonomic function. **Homeopathy:** Mechanism is highly controversial. Traditional theory posits that highly diluted remedies retain an "energy imprint" stimulating the body's "vital force." However, modern science notes dilution often exceeds Avogadro's constant ( $10^{23}$ ), meaning virtually no original molecules remain; efficacy may be due to placebo effects (Ernst, 2018) [9]. **Naturopathy:** Emphasizes "supporting the body's innate healing ability." Mechanisms overlap with other CAM categories (e.g., herbal actions, nutritional supplementation, physiological effects of exercise), focusing on non-drug removal of root causes (e.g., improving diet, reducing stress) to restore self-regulation (Frenkel *et al.*, 2015) [10].

## 5.3 Clinical Application Evidence

**TCM:** Shows advantages in adjunctive treatment of chronic/complex diseases. WHO (2019) reports global recognition of acupuncture for chronic pain. TCM formulas like Liuwei Dihuang Wan improve menopausal syndrome symptoms (hot flashes, insomnia); Jinkui Shenqi Wan adjunctively treats chronic kidney disease, slowing progression (Zhang *et al.*, 2020) [52]. TCM pattern differentiation combined with chemotherapy improved survival rates and reduced side effects in advanced lung cancer patients (Chen *et al.*, 2019) [4]. **Ayurveda:** Widely used for metabolic and skin disorders. An RCT by Singh *et al.* (2017) [42] found Ayurvedic diet combined with turmeric/gotu kola extracts improved glycemic control and insulin resistance in type 2 diabetes. Herbs like neem extract treated acne/eczema with efficacy comparable to topical corticosteroids but fewer side effects (Gupta *et al.*, 2016) [13]. **Homeopathy:** Clinical evidence is highly debated. A meta-analysis by Ernst (2018) [9] of 176 RCTs found overall efficacy not significantly different from placebo. Some studies on allergic rhinitis/migraine suggest possible mild effects (Mathie *et al.*, 2014) [30]. **Mainstream medicine** generally does not recommend homeopathy as conventional treatment. **Naturopathy:** Holds value in health management and chronic disease prevention. Research by Frenkel *et al.* (2015) [10] showed naturopathic interventions (diet, exercise, stress management) reduced metabolic syndrome incidence and improved lipid/glucose profiles. Naturopathy combined with conventional care reduced fatigue and improved quality of life in chronic fatigue syndrome patients (Jason *et al.*, 2012) [20].

### 5.4 Safety Concerns

**TCM risks:** (1) Herb toxicity and interactions. Some herbs contain toxic components (e.g., aconite, nux vomica); improper processing or overdose can cause poisoning. Herb-drug interactions exist, e.g., licorice may reduce antihypertensive efficacy (Zhang *et al.*, 2020) [52]. (2) Acupuncture safety as previously described. **Ayurveda risks:** Some Ayurvedic herbs have been found contaminated with heavy metals (lead, mercury, arsenic), risking accumulation with long-term use (Ernst, 2018) [9]. Dietary restrictions may lead to nutritional deficiencies. **Homeopathy risks:** Primarily delayed treatment. Patients abandoning conventional care for homeopathy risk disease progression. Some products lack rigorous quality testing, may contain impurities (Mathie *et al.*, 2014) [30]. **Naturopathy risks:** Over-reliance on diet/exercise while neglecting conventional treatment may delay care for acute/severe conditions. Some practitioners lack qualifications, may offer unscientific advice (Frenkel *et al.*, 2015) [10].

## Safety and Regulatory Status of CAM

### 1. Core Safety Risks

Synthesizing the above, CAM safety risks can be categorized into four main types:

**1. Delayed Treatment Risk (Alternative Use):** The most severe risk. Patients view alternative therapies as replacements for conventional care, abandoning surgery, chemotherapy, essential drugs, leading to disease progression (e.g., cancer patients choosing herbs over chemo, diabetics choosing diet over medication) (Singh *et al.*, 2018) [41].

2. **Interaction Risk with Conventional Medicine:** Most common with Natural Product-Based Practices (herbs, supplements), potentially reducing drug efficacy or increasing adverse reactions (e.g., St. John's Wort interactions) (Izzo & Ernst, 2009)<sup>[19]</sup>.
3. **Treatment-Related Adverse Events:** Including infections from acupuncture, nerve injury from spinal manipulation, herb toxicity, burns from moxibustion, etc., often related to non-standardized practice, improper dosing, poor quality control (Ernst, 2018)<sup>[9]</sup>.
4. **Quality and Qualification Risks:** Lack of uniform quality control standards for CAM products (herbs, supplements) leads to issues like heavy metal contamination, adulteration, pesticide residues. Some practitioners lack professional certification, leading to non-standardized practice (WHO, 2019).

## 2. Global Regulatory Status

Current global CAM regulation shows a trend of "differentiation and gradual standardization," primarily in three modes:

1. **Strict Regulatory Mode (e.g., USA, EU):** In the US, the FDA regulates natural products as "dietary supplements," requiring ingredient/dosage labeling and prohibiting false claims. Practices like acupuncture/massage require practitioner licensure via professional exams (NCCIH, 2021). The EU's Traditional Herbal Medicinal Products Directive allows simplified registration for traditional herbal medicines used over 30 years, requiring safety/efficacy evidence (Ernst, 2018)<sup>[9]</sup>.
2. **Categorized Regulatory Mode (e.g., China, India):** China regulates TCM under the Traditional Chinese Medicine Law of the People's Republic of China; herbal medicine production/sales require drug approval; acupuncture/tuina practitioners require TCM practitioner licenses. Other CAM therapies (yoga, probiotics) are regulated under categories like "health products," "medical devices," or "service industries" (National Health Commission, 2016). India has specific regulation for Ayurveda; practitioners require licensure via exams; herbal products must meet Indian Pharmacopoeia standards (Singh *et al.*, 2017)<sup>[42]</sup>.
3. **Lax Regulatory Mode (e.g., some developing countries):** Some lack specific CAM regulations, leading to poor quality control for products and incomplete practitioner certification systems, resulting in higher safety risks (WHO, 2019).

## 3. Regulatory Challenges and Recommendations

CAM regulation faces three main challenges: (1) Diversity of theoretical systems, making unified standards difficult; (2) Heterogeneity of evidence, making safety/efficacy judgments hard for some therapies; (3) Insufficient industry self-regulation, with some practitioners/companies engaging in false advertising or selling inferior products for profit (Ernst, 2018)<sup>[9]</sup>.

Addressing these challenges, recommended regulatory strategies include: (1) Combining categorized and evidence-based regulation: Strict regulation for evidence-supported

therapies (acupuncture, probiotics), stronger risk warnings for those with insufficient evidence (energy therapies). (2) Establishing quality standard systems for CAM products, strengthening testing for contaminants. (3) Improving practitioner qualification/certification systems, promoting standardized CAM education (e.g., establishing professional courses). (4) Enhancing international cooperation to share safety/efficacy data and harmonize global standards (WHO, 2019).

## Discussion

CAM's core value lies in its "diverse, holistic, personalized" intervention philosophy, complementing the conventional medical focus on disease treatment over mind-body regulation. In chronic pain, mood disorders, and adjunctive chronic disease treatment, CAM demonstrates unique advantages by modulating physiology and improving mental state, enhancing treatment outcomes, reducing side effects, and meeting patient desire for "gentler therapies" (NCCIH, 2021). Furthermore, traditional medical systems within CAM (e.g., TCM, Ayurveda) contain rich medical wisdom, providing inspiration for new drug/therapy development (e.g., artemisinin from *Artemisia annua* for malaria). However, CAM has significant limitations: (1) Variable evidence quality; some therapies (energy therapies, homeopathy) lack high-quality RCT support; efficacy may be placebo-driven. (2) Incomplete understanding of mechanisms; theoretical bases often differ from modern science, making biological explanations challenging. (3) Safety risks cannot be ignored; delayed treatment, drug interactions threaten safety. (4) Lack of uniform standards/guidelines for treatment protocols, product quality, practitioner qualifications, leading to inconsistent clinical application (Ernst, 2018; WHO, 2019)<sup>[9]</sup>.

## Research Methodology

This paper employs SWOT analysis and SO-ST-WO-WT strategic planning. SWOT analysis, a classic tool for organizational strategic planning, provides an objective basis for strategy formulation by systematically examining internal Strengths and Weaknesses alongside external Opportunities and Threats. Building upon the SWOT analysis results, SO-ST-WO-WT strategic planning constructs a four-quadrant strategic system, enabling the dynamic alignment of internal resources with the external environment. In complex and ever-changing environments, the scientific rigor of strategic planning directly determines an organization's survival and development. Since its formal introduction by American management scholar Heinz Wehrich in the 1980s, SWOT analysis has been widely applied in fields such as business management, public policy, and project planning (Wehrich, 1982)<sup>[48]</sup>. However, merely listing SWOT factors is insufficient for translating them into executable strategies. Consequently, the SO-ST-WO-WT four-quadrant strategic planning framework emerged. It generates targeted action plans through factor combinations, creating a closed loop between strategic analysis and implementation, thereby significantly enhancing the practical value of strategic planning.

The essence of SWOT analysis is the "systematic scanning and factor matching of internal and external environments." Its core lies in clearly distinguishing between "controllable internal factors" and "uncontrollable external factors," while identifying interrelationships among these factors. Internal

factors focus on the organization's own resources and capabilities: Strengths (S) are unique competitive advantages, such as core technologies, brand influence, or efficient teams—controllable and positive internal conditions. Weaknesses (W) are shortcomings and deficiencies within the organization, such as funding shortages, outdated technology, or rigid management processes—controllable yet negative internal factors. External factors pertain to the macro and industry environment in which the organization operates: Opportunities (O) are favorable conditions arising in the external environment, such as policy support, growing market demand, or technological innovation—uncontrollable but positive external variables. Threats (T) are potential risks in the external environment, such as intensified market competition, tightening regulations, or rising raw material costs—uncontrollable and negative external variables. Effective SWOT analysis must adhere to two key principles: first, objectivity, relying on data and facts rather than subjective judgment (e.g., determining market share through research to identify strengths, or recognizing funding gaps through financial reports to identify weaknesses); second, dynamism, as both internal and external environments are in constant flux, requiring regular updates to the analysis to avoid formulating long-term strategies based on static data.

SO-ST-WO-WT strategic planning is the extension and practical application of SWOT analysis. Through the cross-combination of the four factors, it forms four types of targeted strategies, covering various scenarios such as growth, turnaround, defense, and retrenchment. (I) SO, Strategies: Strengths-Opportunities Strategies. The core of SO strategies is "leveraging strengths to seize opportunities," i.e., fully utilizing internal strengths to proactively capture external opportunities, thereby achieving scale expansion and capability enhancement. This approach is suitable when an organization possesses significant internal strengths and faces abundant external opportunities. (II) WO Strategies: Weaknesses-Opportunities Strategies. WO strategies focus on "addressing weaknesses to grasp opportunities," i.e., leveraging external opportunities to compensate for internal weaknesses, enabling organizational transformation and capability upgrading. This is applicable when clear external opportunities exist alongside evident internal shortcomings. (III) ST Strategies: Strengths-Threats Strategies. ST strategies emphasize "using strengths to counter threats," i.e., relying on internal strengths to mitigate or respond to external threats, maintaining stable organizational development. This is suitable when internal strengths are prominent but external threats are severe. (IV) WT Strategies: Weaknesses-Threats Strategies. The core of WT strategies is "risk avoidance and loss minimization," i.e., reducing organizational operational risks by minimizing internal weaknesses and avoiding external threats. This approach is applicable when significant internal weaknesses coincide with severe external threats, such as a cash-strapped small-to-medium enterprise facing an industry downturn. Successful application of SWOT and SO-ST-WO-WT strategic planning requires attention to three key aspects: first, the accuracy of factor matching, avoiding strategic combinations disconnected from reality; second, the focus of resource allocation, prioritizing the investment of resources into core strategies; and third, the flexibility of

dynamic adjustment, involving regular assessment of changes in internal and external factors and timely optimization of strategies (David, 2012).

## SWOT Analysis

### S: Strengths

1. It emphasizes a holistic approach.
2. Non-invasive, low-risk, and well-accepted.
3. Focuses on lifestyle intervention.
4. Promotes strong practitioner-patient relationships, emphasizing support and communication.
5. Capable of complementing Western medicine.

### W: Weaknesses

1. Inconsistent efficacy evidence, making comprehensive standardization difficult.
2. Significant variation in clinical techniques, posing challenges for quality control.
3. Some practitioners lack knowledge of mainstream medicine.
4. Over-commercialization and an aura of mysticism undermine credibility.
5. Lacks comprehensive safety records and risk management systems.
6. Fails to provide precise, quantifiable outcome tracking.

### O: Opportunities

1. Global aging population: Multiple chronic conditions necessitate "integrated care."
2. Substantial growth in demand for chronic disease and mental health management.
3. Rapid expansion of Integrative Medicine and Lifestyle Medicine.
4. Technological advancements (AI, biosensors, VR) enable more scientific approaches in CAM.

### T: Threats

1. Skepticism from the medical community and increasingly stringent regulations in various countries.
2. Media amplification of isolated adverse events.
3. Rising scientific literacy among consumers, demanding evidence-based practices.
4. Pseudotherapies and exaggerated marketing claims create confusion.
5. Risk of being excluded from health policies without supporting evidence.
6. Intense competition from rapidly advancing new technological treatments.

## SO-ST-WO-WT Strategies

### 1. SO, Strategies

**S1O1 Strategy:** Leverage Strength (S1) Emphasizing a Holistic Approach to seize Opportunity (O1) Global Aging Demanding Integrated Care

In response to the complex realities of multimorbidity and intertwined physical-mental conditions prevalent in aging societies, the holistic perspective of CAM should evolve from a philosophical concept into actionable service models integrated into mainstream geriatric health systems. By holistically integrating physiological, psychological, and functional aspects of living, CAM can effectively penetrate the senior care market, positioning itself as a key opportunity within the global aging trend.

**S3O2 Strategy:** Leverage Strength (S3) Focusing on Lifestyle Intervention to seize Opportunity (O2) Rapid Growth in Chronic Disease and Mental Health Needs.

Addressing the intertwined challenges of rising chronic diseases and mental health issues, CAM should proactively transform its core strength in lifestyle intervention into preventive and rehabilitative programs that integrate into mainstream systems. This strategy aims to elevate CAM from an adjunctive role to a core non-pharmacological pillar in chronic disease management and mental health promotion.

**S5O4 Strategy:** Leverage Strength (S5) Ability to Complement Western Medicine to seize Opportunity (O4) Technological Advancements Making CAM More Scientific.

To translate the complementary potential between CAM and Western medicine into verifiable, scalable practice, this strategy advocates for fully utilizing technologies like AI, wearables, and VR to build a data-driven integration platform.

## 2. ST Strategies

**S2T2 Strategy:** Leverage Strength (S2) Non-invasive, Low-risk, High Acceptability to avoid Threat (T2) Medical Community Skepticism and Stricter National Regulations.

Facing skepticism and tighter regulations, CAM should proactively highlight its core advantages of being non-invasive, low-risk, and highly acceptable, using these as entry points for compliance and trust-building.

**S3T4 Strategy:** Leverage Strength (S3) Focusing on Lifestyle Medicine (Lifestyle Intervention) to avoid Threat (T4) Rising Consumer Scientific Literacy and Demand for Evidence.

This strategy leverages the strength of lifestyle medicine to proactively address, in an evidence-based manner, the demand for evidence driven by rising consumer scientific literacy. CAM should focus on its expertise in lifestyle intervention to actively construct an evidence-based lifestyle medicine system. This allows consumers to clearly see the objective link between interventions and health improvements, elevating the experience from "possibly helpful" to "proven effective by data."

**S5T2 Strategy:** Leverage Strength (S5) Ability to Complement Western Medicine to avoid Threat (T7) Rapid Advancement and Intense Competition from New Technological Treatments.

Rather than competing directly with new high-tech treatments, this strategy emphasizes the value of integrative medicine to mitigate the threat from rapid technological progress and fierce competition. CAM should strengthen its complementary role, clearly defining its unique value in supportive areas such as improving treatment tolerance, enhancing quality of life, and accelerating functional recovery.

**S1T3 Strategy:** Leverage Strength (S1) Emphasizing a Holistic Approach to avoid Threat (T3) Media Amplification of Isolated Adverse Events.

Centered on its holistic approach, this strategy can effectively dispel misunderstandings and panic caused by media amplification of isolated incidents. In response to this

threat, CAM needs to proactively use its holistic strength to build a systematic safety and risk management framework that goes beyond single therapies and covers the entire service process, transforming passive defense into proactive, transparent trust-building.

## 3. WO Strategies

**W1O1 Strategy:** Mitigate Weakness (W1) Inconsistent Efficacy Evidence and Lack of Standardization to seize Opportunity (O1) Global Aging: Multimorbidity Demanding Integrated Care.

This strategy uses public science education to establish reasonable expectations for integrated care, seizing the opportunity presented by global aging. To capitalize on this, the CAM industry should shift its mindset, turning the challenge of inconsistent evidence into motivation for developing new evidence frameworks suitable for the complex geriatric population.

**W2O2 Strategy:** Mitigate Weakness (W2) Significant Variation in Clinical Techniques and Difficulty in Quality Control to seize Opportunity (O2) Substantial Growth in Chronic Disease and Mental Health Needs.

This strategy shifts focus from individual technique variations to standardized processes and quantifiable outcomes, thereby seizing the opportunity presented by growing chronic disease and mental health needs. Facing this huge demand, the CAM industry should transform the challenge of clinical variation into an opportunity to establish high-standard, professionalized service protocols, thereby earning the trust of patients and the mainstream healthcare system.

**W6O4 Strategy:** Mitigate Weakness (W6) Inability to Provide Precise, Quantifiable Outcome Tracking to seize Opportunity (O4) Technological Advancements Making CAM More Scientific.

This strategy leverages technological progress to make CAM more scientific, using this as a core narrative for public communication. To shift CAM from reliance on subjective feelings towards objective verification, it should systematically utilize advanced technology to establish a digital outcome tracking and assessment system covering the entire service process.

## 4. WT Strategies

**W2T3 Strategy:** Mitigate Weakness (W2) Significant Variation in Clinical Techniques and Difficulty in Quality Control to avoid Threat (T3) Media Amplification of Isolated Adverse Events.

This strategy should proactively establish a narrative framework centered on safety and quality to reduce the negative impact of media-amplified incident reports. To counter this threat, the CAM industry must treat clinical technique variation as a systemic priority issue. By establishing an open, transparent quality control and safety reporting system, it can actively rebuild public trust.

**W1T2 Strategy:** Mitigate Weakness (W1) Inconsistent Efficacy Evidence and Lack of Standardization to avoid Threat (T2) Medical Community Skepticism and Stricter National Regulations.

This strategy needs to build a professional image characterized by transparency, evidence-based practice, and

clear indications, avoiding overstatements. Facing deep skepticism and tightening regulations, the CAM industry must tackle the core weakness of inconsistent evidence as its primary challenge. It should proactively generate rigorous scientific evidence to reshape its standing, rather than engaging in passive justification.

**W5T7 Strategy:** Mitigate Weakness (W5) Lack of Comprehensive Safety Records and Risk Management Systems to avoid Threat (T7) Rapid Advancement and Intense Competition from New Technological Treatments.

This strategy should shift its core focus from competing on efficacy to demonstrating safety and transparency, building a differentiated advantage. In the face of intense competition from high-tech treatments, CAM can turn its safety record deficiency into an opportunity to construct a proactive, data-driven risk management system, thereby establishing a differentiated advantage in safety and tolerability.

### Conclusion

This study systematically analyzed the positioning and development prospects of CAM (Computed Tomography-Alternative Medicine) within the modern healthcare system, covering aspects such as concept, classification, mechanism, clinical evidence, safety, and strategic planning. The results indicate that the core value of CAM lies not only in its non-invasive nature and emphasis on holistic health and lifestyle intervention, but also in its ability to complement Western medicine's shortcomings in chronic disease management, psychological stress, and lifestyle adjustments. Relatively clear research supports CAM in areas such as acupuncture, yoga, meditation, massage, herbal medicine, and probiotics, demonstrating its clinical feasibility in pain management, mental health, gastrointestinal function regulation, and adjunctive treatment of metabolic diseases.

However, limitations of CAM remain significant, including inconsistent evidence, varying quality control, a lack of biomedical mechanistic basis for some therapies, potential operational risks during implementation, and delays caused by patients replacing regular treatment with alternative therapies. To truly integrate CAM into the mainstream healthcare system, three core areas need strengthening: First, establishing more rigorous clinical trial and evaluation methodologies to improve the overall quality of evidence; second, establishing standardized safety protocols, quality management, and practitioner certification systems; and third, promoting interdisciplinary collaboration and driving the development of integrative medicine and digital health technologies (such as AI, wearable sensing, and VR) in CAM applications to make treatment efficacy more traceable and quantifiable (ChatGPT, 2023). Assistive and alternative medicine has become an important health trend globally, effectively complementing traditional medical models. However, its future success will depend on effectively combining internal strengths with external opportunities and overcoming its core evidence and standardization challenges.

CAM Future Strategic Directions as followings: Firstly, Evidence-Based Integration is the Core Direction (SO Strategy): CAM should combine its holistic approach (S1) and high acceptance (S2) with the development trend of integrative medicine (O3) to comprehensively promote the practice of integrative medicine, aiming to establish patient-centered, data-driven personalized treatment plans.

Secondly, Embrace Technology to Establish Standards (SO Strategy): Fully leverage technologies such as artificial intelligence (AI), wearable devices, and virtual reality (VR) (O4) to establish a data-driven integrated platform (S3) to address the high variability (W2) and difficulty in standardization inherent in traditional CAM clinical practice. Finally, Proactively Build Safety and Transparency (ST/WT Strategy): Facing skepticism from the medical community (T2) and stricter regulations (T3), the CAM industry must utilize its non-invasive and low-risk advantages (S2) to proactively build a professional image. Establishing a robust safety record and risk management system (W5) must be a priority, and rigorous scientific evidence must be proactively generated to address the fundamental weakness of inconsistent efficacy evidence (W1) to rebuild public trust and avoid being weakened by the amplifying effect of negative events (T5).

SWOT and SO-ST-WO-WT strategy analysis show that the key to CAM's future success lies in "evidence-based, standardization, technological advancement, and integration." By strengthening the role of CAM in daily medical care, chronic disease prevention, and mental and physical health management, coupled with appropriate policy support and oversight, CAM has the potential to evolve from a supplementary role into a vital component of integrated healthcare. The complementarity between CAM and Western medicine will improve the quality of care, alleviate chronic disease and mental health issues, and promote a truly patient-centered holistic health model. CAM must move from passive "substitution" to proactive "integration," from experience to evidence-based practice, and from disorganization to standardization. Only through rigorous scientific research, transparent quality control, and clear policy support can CAM truly realize its potential and become a safe, effective, and indispensable part of the global healthcare system.

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