

Transcultural headache medicine: A framework for integrating cultural contexts into headache science and care – a call to action from the International Headache Society

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Abstract

Headache disorders are among the most disabling neurological conditions, affecting over 1.5 billion people globally. Despite advances in pharmacological therapies, major inequities persist due to underdiagnosis, undertreatment and limited access to effective care, particularly in low- and middle-income countries. Social determinants of health, including cultural meanings, language and health beliefs, are increasingly recognized as key drivers of disparities in burden, diagnosis and treatment outcomes. Traditional medicine, used by more than 80% of the global population, remains first-line care in many regions and continues to influence therapeutic choices in high-income settings. Major systems such as Ayurveda, Traditional Chinese Medicine, Unani and Tibetan medicine, as well as diverse indigenous traditions, emphasize holistic approaches that integrate mental and physical symptoms into diagnosis and management. Additionally, religious and spiritual practices are commonly used to relieve suffering and pain. These culturally grounded explanatory models not only strongly shape health-seeking behavior, treatment adherence and patient narratives, but also may delay biomedical care when misconceptions or unsafe practices predominate. This paper introduces Transcultural Headache Medicine as an emerging framework that integrates cultural contexts, linguistic diversity and traditional practices into headache research, clinical care and policy. We review global traditions and therapeutic modalities including herbal, physical, mental and spiritual approaches, and propose a research agenda combining ethnography, culturally adapted diagnostic tools, experimental studies and clinical trials to evaluate benefits, risks, and contextual effects. We conclude with a call to action from the International Headache Society, aiming to map and evaluate culturally embedded practices, strengthen rigorous evidence and build a global learning network that supports culturally safe integration of effective, affordable and safe headache care.

Keywords

cultural competency, ethnopharmacology, global health, primary headache disorders, traditional medicine

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Introduction

Headache disorders are among the most disabling neurological conditions, migraine affects 1.16 billion people worldwide. They are broadly divided into primary and secondary forms, with migraine, tension-type headache (TTH) and trigeminal autonomic cephalalgias (TACs) being the most prevalent.¹ Management typically combines acute and preventive strategies, including both pharmacological and non-pharmacological approaches.²

Over the past three decades, advances in targeted pharmacological therapies have substantially improved outcomes for headache management.³ Nevertheless, global inequities persist, with underdiagnosis, undertreatment, and limited access to effective care remaining critical challenges, particularly in low- and middle-income countries (LMICs).⁴ Social determinants of health drive disparities in disease burden and healthcare access.^{5,6} Cultural meanings, health beliefs and locally available healing options influence symptom interpretation, help-seeking, treatment adherence and patient-provider communication.^{4,6,7} In many LMICs, traditional medicine is commonly used as an initial pathway to care, due to cultural heritage and constraints in availability, affordability, and acceptability of services.^{8–10}

Cultural diversity, expressed through more than 7000 languages and thousands of healing traditions, may create substantial variation in how headache symptoms are named, classified and treated, with measurable consequences for utilization and outcomes,¹¹ making a transcultural approach essential for accurate assessment and effective care.^{11,12}

To address this gap, we introduce transcultural headache medicine (THM) as an analytical framework for studying how cultural logics and health-system structures interact with headache biology, diagnosis, care pathways, and outcomes. THM provides conceptual and methodological tools to (i) document cross-context variation in headache concepts and practices; (ii) examine interactions with biomedical classifications, including the International Classification of Headache Disorders, 3rd edition (ICHD-3); and (iii) inform the co-design of measurement tools, interventions, and policies that are both scientifically rigorous and culturally grounded. Where evidence is limited or inconsistent, THM is used to identify and prioritize knowledge gaps rather than to issue recommendations, explicitly distinguishing established findings from proposed research and implementation directions.

THM complements, but is distinct from, cultural competence (which focuses on clinician skills in individual encounters) and integrative medicine (which emphasizes combining modalities in clinical care). Instead, THM situates headache disorders within plural care systems and broader global health structures, linking patient narratives and local practices to population-level measurement, study design, implementation science and policy, while foregrounding access, equity, safety, and quality. In this review, we synthesize culturally grounded diagnostic and therapeutic approaches across settings, interpret traditional therapies as systems of meaning and care (not only as modalities), and outline implications for research, clinical practice and health policy.

Definitions, scope and distinctions

We define THM as the systematic study and application of how cultural meanings, language, explanatory models, traditional healing systems and health-system structures interact to shape headache experience, classification, help-seeking, treatment choices and outcomes. While cultural competence focuses on clinician–patient communication and integrative medicine focuses on the combination of therapeutic modalities at the bedside, THM extends beyond the clinical encounter to include measurement, research design, implementation science and policy, linking individual narratives to community practices and system-level access. This distinction clarifies the intent this review: to provide an analytical framework and research agenda rather than to propose a prescriptive model of care.

An essential component of a transcultural approach is the role of traditional medicines. The World Health Organization (WHO) defines traditional medicine as the accumulated knowledge, skills, and practices rooted in diverse cultures and used to maintain health and prevent, diagnose and treat illness. These practices predate modern biomedicine by millennia, including long-established systems such as Ayurveda and Traditional Chinese Medicine, and often reflect holistic models of health and healing.

Traditional medicines across the globe

Traditional medicine became a modern reality since the WHO launched the Traditional Medicine Strategy 2025–2034 to promote safe, effective and people-centered traditional medicine globally.¹³ Traditional medicine includes both codified systems (formally organized and documented) and non-codified systems (community-based, orally transmitted).^{14,15} These traditions evolved from experiential knowledge and, perhaps contrary to conventional medical opinion, continue to adapt in dialogue with scientific inquiry, generally emphasizing whole-person-centered approaches that aim to restore balance of mind¹⁶ body¹⁷ and environment.¹⁸

Major systems include Traditional Chinese Medicine, Ayurveda, Siddha and Unani; Japanese Kampo and Korean medicine; Tibetan and Mongolian traditions; diverse African medical systems along with those of the African diaspora; Native American and Amazonian shamanic practices; and Australian Aboriginal medicine rooted in Dreamtime cosmology and New Zealand Maori and Pacific Island traditional medicine.^{15,16,19–26} In Europe, folk and phytotherapeutic practices remain widespread, reflecting the legacy of Galenic and Greco-Arabic medicine.²⁵ (Figure 1) Collectively, these traditions illustrate the global breadth of culturally embedded approaches to health and disease.

Explanatory models of headache in cultural and belief systems

Across cultures, headache is not only understood as a biological phenomenon, but also is embedded within broader cultural, philosophical and spiritual/religious worldviews. Traditional explanatory models integrate environmental, spiritual and bodily dimensions^{26,27} and shape symptom recognition, remedy choice and decisions to seek traditional versus biomedical care.²⁸

These models not only facilitate meaning-making and engagement with care, but also contribute to delayed diagnosis or suboptimal management when misconceptions predominate. Beliefs that headache is caused exclusively by eye strain, the liver, blood pressure changes or specific foods may reinforce stigma or encourage reliance on ineffective or harmful remedies. Because adherence is frequently low in migraine,²⁹ aligning management plans with patients' explanatory models, while explicitly addressing unsafe or inaccurate beliefs, is essential to improve adherence and timely access to effective therapies; recent head-to-head trials highlight the importance of straightforward clinical outcomes to patients.³⁰

Bridging traditional and biomedical diagnostic frameworks

While most traditional medicines are rooted in concepts comparable to homeostasis, their diagnostic approaches differ fundamentally from contemporary biomedical classifications. Many traditional systems integrate both mental and physical symptoms into their semiology and employ distinct diagnostic tools, such as pulse examination, skin assessment, joint mobility or tongue inspection.³¹ Far from anecdotal, these practices represent millennia of systematic iterative observation, data collection and codification or synthesis into coherent diagnostic frameworks.^{32–36} Moreover, patients are further subclassified based on the constellation of clinical symptoms or signs.

In contrast, the ICHD-3 defines entities such as migraine, TTH and TACs through precise criteria involving symptom description, duration, frequency, associated features and exclusion of secondary causes.³⁷ While both traditional and biomedical systems aim to categorize and guide treatment, their emphases diverge: ICHD-3 prioritizes standardized clinical symptoms/signs (e.g. unilateral pain, photophobia, nausea), whereas traditional medicine incorporates a broader constellation of bodily, environmental and mind-related indicators. Areas of overlap are likely, yet remain underexplored.

Traditional medical systems typically adopt holistic paradigms that seek to address the individual as an integrated whole, emphasizing balance and the interconnection of physical, mental and spiritual dimensions.^{15,17,38} On the

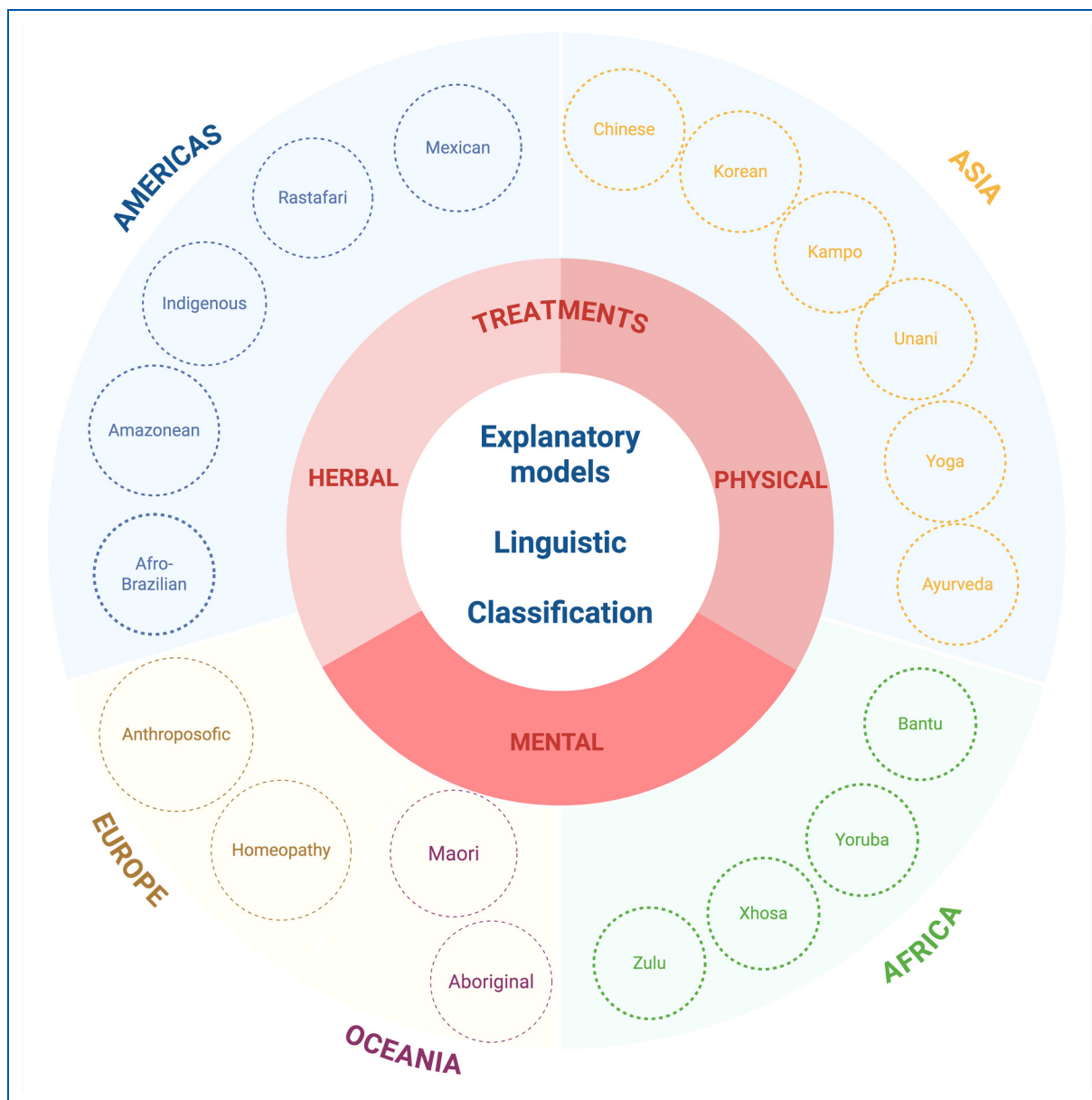


Figure 1. Traditional medical systems across regions, treatment modalities and their explanatory frameworks.

other hand, while modern healthcare systems have largely been organized around the identification and correction of discrete pathophysiological processes, this orientation is being expanded to incorporate preventive, behavioral and psychosocial dimensions of health.³⁹

An important open question is the degree of correspondence between traditional diagnostic categories and ICHD-3 primary headache disorders, and whether cross-framework mapping can improve diagnostic precision. Establishing this correspondence could also guide more rigorous evaluation of traditional interventions within ICHD-3 diagnoses and, conversely, test biomedical therapies across traditional categories.

Addressing linguistic barriers

An additional challenge in bridging traditional and biomedical frameworks is the role of language in shaping the understanding and classification of headache symptoms. Linguistic variation introduces pitfalls because the meaning of cardinal terms may not translate directly across languages or cultural contexts, leading to discrepancies in how patients describe their experiences and how clinicians interpret them. In many traditional systems, metaphoric or symbolic expressions (e.g. “wind invading the head” in Traditional Chinese Medicine or “fire in the brain” in Ayurveda) encode symptomatology within culturally specific terminology that does not align neatly with biomedical

descriptors. Even within modern medicine, the nuances of words like “tension,” “migraine,” “autonomic,” “cluster” or “vertigo” differ across languages, sometimes conflating distinct disorders or misrepresenting patient complaints. These semantic mismatches complicate standardized tools (e.g. ICHD-3) and underscore the need for culturally adapted instruments, validated translations of the ICHD and other headache metrics, and clinician training to reduce misclassification and improve care.⁴⁰

Treatment modalities

Traditional headache-relevant practices can be grouped into herbal,^{32,34–36,38} physical^{17,41,42} and mind–body/spiritual modalities¹⁶ Figure 1. In practice these categories often overlap; we summarize each to clarify definitions and evaluation needs.

Understanding traditional therapies therefore requires moving beyond technical descriptions toward an analysis of how meaning, ritual and social context interact with neurobiological processes and health-system structures.

Herbal therapies

Herbal therapies encompass preparations derived primarily from plants, roots, leaves, flowers, seeds and bark, as well as fungi, and occasionally animal or mineral products.^{36,43,44} These remedies are administered in diverse forms, including infusion, decoctions (employing boiling material for extraction), tinctures, powders, capsules, oils, fumigations, poultices and topical liniments.⁴⁵ Access pathways vary from household cultivation and community foraging to prescription-based use within traditional systems (e.g. Traditional Chinese Medicine, Ayurveda, Unani)⁴⁶ and regulated pharmacopeia with commercial supply chains. Standardized extracts and integrative clinical supplements represent more formalized avenues, often with quality control measures in place. Despite their widespread use and the success of a drug such as aspirin, derived from willow bark,⁴⁷ scientific knowledge of these practices in the headache field remains limited.⁴⁸ There is a pressing need to map usage patterns, understand the biology and ethnopharmacology of active (and inactive) compounds, clarify mechanisms of action in preclinical models, and test safety and efficacy in well-designed clinical trials, especially for commonly used herbal complex formulas.

Physical interventions

Physical Interventions deliver therapeutic benefits through the application of a physical medium or energy to tissues.⁴² These include thermal modalities such as moxibustion (burning of a herb above an acupuncture point), heat packs or cryotherapy; mechanical pressure and movement such as

massage, Gua Sha (Traditional Chinese Medicine technique with a smooth-edged tool), myofascial release, posture correction or cervical exercises; and negative or positive pressure techniques such as cupping, *hijama* (wet cupping) or bloodletting.^{49,50} Needle-based interventions range from dry-needling to acupuncture (traditional, electric, laser) and may be combined with moxibustion. Movement-based therapies, such as Tai Chi and Qigong, integrate physical motion with breathing and energy regulation. Manual therapies, such as Tui Na, spinal manipulation and mobilization, also fall within this category. While some of these techniques have been incorporated into headache management, others remain underexplored and warrant systematic evaluation of mechanisms and clinical utility.

Mental approaches

Mental approaches refer to practices where the primary therapeutic agent is mental, spiritual, or relational rather than chemical or physical. These include meditation,⁵¹ mindfulness, breathwork, relaxation training, guided imagery, hypnosis and biofeedback, as well as spiritual/religious or ritual practices such as prayer,⁵² energy-based healing (e.g. Reiki, Qigong) and shamanic ceremonies. These practices may or may not involve pharmacologically active agents or physical practices that are conducive to a meditative/spiritual state. Such approaches may promote symptom relief by modulating attention, stress responses and pain perception, and often hold deep cultural or spiritual significance for patients.^{53,54} However, their use raises important considerations regarding cultural sensitivity, informed consent for altered-state practices and the need to screen for psychiatric vulnerability. Integration with standard health care is particularly important for individuals with severe or disabling symptoms.

Together, these modalities illustrate the breadth of culturally embedded approaches relevant to headache care, and their evaluation requires attention to both mechanisms and context.

Health professionals should also consider the possible negative consequences of these practices, such as patients refusing or delaying medical treatment. Negative spiritual outcomes, often referred to as “religious or spiritual struggles,” have been associated with greater psychological distress and poorer overall well-being. These struggles may involve feelings of guilt, abandonment by a higher power or conflicts with religious communities, potentially exacerbating suffering rather than alleviating it. Addressing these challenges requires a careful assessment of patients’ spiritual experiences, balancing respect for cultural and religious values with the responsibility to ensure safe and effective healthcare.⁵⁵

An explicit focus on ineffective or potentially harmful practices is integral to THM. While culturally embedded therapies may provide meaning or perceived benefit, their

uncritical use can expose patients to direct harms (toxicity, contamination, unsafe procedures), indirect harms (diagnostic delay, missed secondary headache red flags, delayed access to evidence-based treatment) and psychosocial harms. Harm minimization is therefore one of the principle of the framework, prioritizing patient safety, timely diagnosis and access to effective care while avoiding both uncritical endorsement and dismissive rejection of culturally embedded practices.

Across cultures, therapeutic rituals can amplify contextual effects (including placebo mechanisms) through expectation, trust and meaning, engaging endogenous pain-modulatory pathways. A transcultural lens therefore evaluates interventions not only for specific effects, but also for contextual drivers that may influence outcomes and implementation. In practice, modalities often converge (e.g. plants ± manual therapy ± prayer/meditation), functioning as integrated systems rather than isolated techniques, which is an important consideration for study design and translation into culturally safe care pathways.^{56–59}

A central challenge in evaluating traditional therapies is disentangling specific therapeutic effects from placebo and contextual effects, particularly because traditional healing practices, operating within culturally meaningful frameworks, may amplify neurobiologically mediated placebo mechanisms that engage pain-modulating systems beyond what is typically observed in conventional care. Addressing this challenge requires rigorous methodological approaches, including controlled trials with matched placebos, component analyses separating specific intervention effects from contextual contributions, preclinical mechanistic studies, explicit measurement of patient beliefs as effect modifiers, and real-world studies assessing effectiveness across populations with varying degrees of cultural adherence. Importantly, distinguishing the relative contributions of specific and contextual mechanisms is essential for transparent communication with patients and for evidence-based treatment recommendations.

A call to action

Aligned with the WHO Traditional Medicine Strategy 2025–2034, the International Headache Society (IHS) proposes THM as a practical framework to promote culturally safe, evidence-informed and timely headache diagnosis and care worldwide. THM is also directly relevant to public health and policy: traditional medicine remains a cornerstone of care in many LMICs and is widely used in high-income countries, making safety, quality, regulation and system integration central considerations¹³ Recent global analyses of migraine care further show how cultural, structural and health-system factors shape diagnostic capacity, access to therapies, advocacy, and education across

regions.^{60–62} THM can strengthen policy relevance and implementation by aligning interventions with real-world health-seeking behaviors, supporting more equitable resource allocation, and mitigating negative commercial determinants of health by expanding the set of rigorously evaluated, culturally acceptable and potentially lower-cost options.⁶³

The IHS acknowledges the importance of THM and translates the vision into a practical call to action to promote culturally safe, evidence-informed, and timely headache diagnosis and care worldwide, through the directions outlined below (Figure 2).

Map and characterize context

Describe and map diagnostic approaches, care pathways, and therapeutic practices across regions. Identify benefits, gaps and harms, including practices that increase stigma or delay diagnosis and access to effective treatment. Define key stakeholders, boundaries and explanatory models.

Build proportionate evidence

Prioritize a research agenda that evaluates culturally embedded therapies using methods proportionate to risk, prevalence and use. Distinguish specific effects from contextual and placebo-related mechanisms. Strengthen evidence on effectiveness, safety, interactions and implementation feasibility in real-world settings.

Enable safe integration and learning

Create a global learning network with IHS affiliates and Ministries of Health. Disseminate best practices, support culturally safe integration, where appropriate, and prevent harm. Promote training, service integration pathways and monitoring indicators that reflect both outcomes and equity.

Research and implementation roadmap

A stepwise roadmap can guide translation from framework to practice:

- (i) Definitional alignment and context mapping (concepts, boundaries, stakeholders, explanatory models).
- (ii) Measurement selection and tool adaptation (core outcomes, implementation metrics, linguistic validation, culturally appropriate instruments).
- (iii) Pilots and evaluation (feasibility, acceptability, safety, effectiveness, context-sensitive mechanisms).
- (iv) Scale-up and policy translation (training, service integration, guideline/policy outputs, surveillance and monitoring indicators).



Figure 2. The International Headache Society call to action.

Conclusions

THM is an emerging field that integrates cultural contexts into research, clinical care and health policy. By systematically examining traditional and culturally grounded approaches, this framework aims to improve equity, strengthen patient-centered care and enhance global health

outcomes. Advancing this field will require international collaboration, interdisciplinary research and the development of culturally sensitive diagnostic and therapeutic tools that complement evidence-based medicine. It calls on the IHS to lead a coordinated agenda to map current practices, strengthen rigorous evidence on benefits and risks, and implement culturally respectful education and care pathways that reduce stigma and avoid delays in effective treatment.



Article highlights










- Embed THM into research and care models, reflecting how cultural meaning, language and plural health systems shape headache experience and pathways.
- Apply safety-first evaluation: distinguish cultural legitimacy from clinical efficacy and prioritize harm minimization.
- Use proportionate methods for traditional/complementary therapies, separating specific effects from contextual meaning effects; test cultural congruence and acceptability.
- Deliver the IHS call to action in stages: map contexts/practices, strengthen evidence on benefits/risks, and scale a global learning network for culturally safe integration.








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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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