

TRAINEES' FORUM

An Asian perspective on complementary and alternative medicine in the treatment of primary headache disorders

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Abstract

Headache is a ubiquitous presentation encountered in a neurologist's daily practice. Most patients are diagnosed to have a primary headache disorder, commonly migraine, tension type or cervicogenic headache. Although there are several acute and preventive treatments for headache including advanced therapies such as monoclonal antibodies and device therapy, there is a trend to use complementary and alternative medicine (CAM) by most patients. This is more so in countries which have cost limitations to newer medications and where therapy is influenced by local culture. This review summarizes available literature from Asia on the use of CAM for headaches. Acupuncture, yoga, tai chi and herbal remedies were believed to be beneficial in migraine prevention while application of medicated oils is believed to be effective in relieving acute migraine attacks. In addition, mind-body relaxation techniques may be beneficial in relief of tension type headaches. Apart from migraine, cervicogenic headaches can be effectively treated with chiropractic manipulation. Ayurveda, supplements, cupping and hirudotherapy have also been listed as being beneficial. The quality of evidence for all the above is, however, low and patients should be made aware of the potential risks of these therapies as well.

KEYWORDS

Primary headache disorder, Acupuncture, Traditional medicine

INTRODUCTION

Headache is one of the most prevalent neurological disorders leading to significant morbidity and health costs. The estimated global prevalence of active headache is 52%, of which 26% suffer from tension type headaches and 14% from migraine.¹ Every day, 15.8% of the world population suffers from a headache. This undeniable burden has paved way for rapid, evidence-based developments in the pharmaceutical industry leading to newer acute and preventive medications and devices. Nonetheless, a significant proportion of headache sufferers pursue complementary and alternative medicine (CAM) as a treatment option, which is often overlooked by neurologists and physicians. Most patients do not discuss

the use of CAM with their healthcare provider, instead, between 41-72% obtain information from their friends or relatives.² This review aims to summarize available literature on CAMs in headache with emphasis on new evidence and current practices in Sri Lanka.

Current trends in complementary and alternative medicine

Complementary and alternative medicine (CAM) is the use of healthcare approaches that are outside standard practice in Western medicine. The term 'complementary' is used when these approaches are used together with standard practice and 'alternative' is when these are used in place of standard



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practice. Integrative medicine combines these two approaches in a holistic manner.³ The overall use of CAM by patients with headache was found to be 26.4% in a study inclusive of all world regions.⁴ In this study conducted in 32 countries, the prevalence was over 50% in Asian countries such as China, Philippines and Korea.⁴ Patients who use these approaches are more likely to be female, married and report headache of a higher severity.² Though higher education level and income are associated with complementary medicine use globally, the opposite of lower income, dependency and lower educational level is seen in Asia.²⁻⁵ Motivations for the use of CAM vary among different populations. A Malaysian study revealed that the most common reasons were to reduce pain (47.7 %) and stress (34.9%), while in 10% the pharmacological agents were distasteful.⁵

In Sri Lanka, a country rich in heritage and natural resources, there are four traditional medicine systems: Ayurveda, Desheeya *Chikitsa* (indigenous medicine), Siddha, and Unani. Although contemporary Western Medicine is the standard practice, traditional systems are said to cater to approximately 60% of the population, especially in rural areas.⁶ In Asia, commonly used CAM approaches for headache disorders include acupuncture, mind-body relaxation techniques (yoga, tai chi), massage oils, phytotherapy, and dietary supplements.

Treatment modalities

Acupuncture

The practice of acupuncture originated in 100 BCE and is an integral component of Chinese traditional medicine. It involves the insertion of fine needles into specific acupuncture points which are located along meridians. Traditional belief is that disease processes block the distribution of “Qi” or energy across meridians and acupuncture helps to restore the free flow of Qi, leading to relief.⁷ Current understanding is that analgesia induced by acupuncture is a result of an integrative process between afferents from pain regions and afferents from acupoints. This occurs at different levels of the central nervous system (CNS). Acupuncture stimulates peripheral A β , A δ and C fibres, following which signals ascend through the spinal ventrolateral funiculus to the brain. A network of complex central pathways involving multiple nuclei is implicated in the process of acupuncture analgesia. Most nuclei are part of the endogenous descending pain inhibitory system in the CNS. Opioid peptides, as well as glutamate, 5-hydroxytryptamine, and cholecystokinin octapeptide are the neurotransmitters involved.⁷

There are several systematic reviews and meta-analyses on the use of acupuncture for the prevention of episodic migraine and acute treatment of migraine, tension type headache, chronic daily headache, and trigeminal neuralgia.⁸ These studies provide moderate quality evidence that acupuncture

reduces headache frequency and improves quality of life. However, most studies included in the reviews were unblinded or did not have a comparator. A recently concluded multicentre, randomized, controlled clinical trial from China, however, provides robust evidence that supports acupuncture as a preventive measure for episodic migraine without aura. In this trial with 147 blinded participants, manual acupuncture was found to be superior to sham acupuncture and usual care ($p=0.005$).⁹ In their follow up it was observed that the treatment effects of manual acupuncture would persist up to 12 weeks.⁹ These outcome data parallel those of botulinum toxin injections, which is currently approved for management of chronic migraine. However, acupuncture involves less injection sites, hence is more patient friendly. The acupuncture points used in the formerly mentioned trial are illustrated in Figure 1. Apart from soreness and minor bleeding at needling sites, acupuncture carries minimal adverse effects. A meta-analysis of 15 systematic reviews concluded that it had fewer adverse events than prophylactic medication.¹⁰ Acupuncture is thereby a potential safe and effective treatment option for headaches, especially in patients with intolerance or poor response to standard medication.

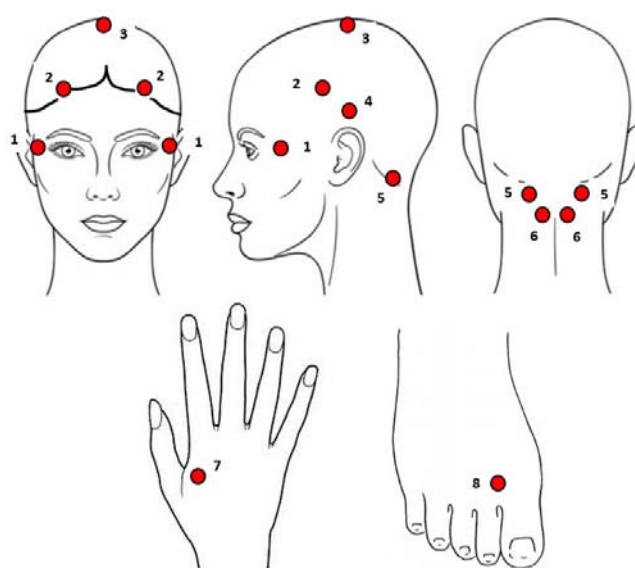


FIGURE 1 Acupuncture points used by Xu et al. for the prevention of episodic migraine. 1-Taiyang (EX-HN5), 2-Touwei (ST8), 3-Baihui (DU20), 4-Shuaigu (GB8), 5-Fengchi (GB20), 6-Tianzhu (BL10), 7-Hegu (LI4), 8-Taichong (LR3).⁹

Mind body relaxation

According to the latest consensus statement of the American Headache Society, relaxation therapies are effective in the management of migraine with Grade A evidence as a preventive therapy. It has limited evidence as an effective acute treatment.¹¹ The main traditional relaxation therapies practiced in Asia are yoga and tai chi.

The therapeutic utilization of yoga dates to 3000 BCE where it is mentioned in Vedic scriptures. In the modern day it is practiced worldwide to improve mental and physical health. It is known that several headache conditions such as migraine and trigeminal autonomic cephalalgias are caused by dysregulation of the autonomic nervous system. Yoga plays a role in downregulating the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis and increasing vagal tone, which may lead to alleviation of headache.¹¹ A systematic review of clinical trials on the effect of yoga as headache treatment states that it may effectively relieve symptoms of primary headaches.¹¹ The CONTAIN trial was a single centre, prospective, randomized, open-label superiority trial with blinded endpoint assessment. A supervised yoga module was carried out for three days per week for one month at the study centre, followed by five days per week for the next two months at home. The yoga programme consisted of eight components, including several breathing techniques (*pranayama*), calming postures (*asana*) and relaxation methods. This study provides Class III evidence that yoga as an add-on therapy is superior to medical therapy alone in reducing headache frequency, intensity, impact, and disability in migraine.¹²

Tai chi is a Chinese traditional exercise technique which also exerts beneficial effects on many other chronic conditions. Effects of tai chi on headache are likely to be indirect, by means of improving general well-being, relieving stress and improving sleep patterns.¹³ A review of 15 studies in over 1000 patients with chronic pain conditions including headache, found that tai chi significantly reduced headache compared to no treatment or usual care.¹⁴ A randomized controlled trial of tai chi for tension headache found that it significantly reduced headache impact scores. Participants in the intervention arm engaged in the classical Yang style of tai chi for one hour, bi-weekly for 15 weeks to achieve this endpoint.¹⁵ Another utilized a modified short form Yang-style tai chi training with 1 hour per day, 5 days per week for 12 weeks in female migraine patients. This was found to significantly reduce both intensity and frequency of migraine attacks.¹³ Although both yoga and tai chi are effective interventions for headaches, more high-quality trials are needed to make evidence-based recommendations.

Massage oils

The practice of massaging medicated oil for pain relief is an age-old tradition in many Asian countries including Sri Lanka. This may lead to headache relief through multiple mechanisms. Massage of areas in the temple and forehead acts via the gate control theory of pain modulation, in a manner like acupuncture. Most oils contain aromatic herbal medicines which stimulate olfactory pathways which in turn may decrease the central response to pain. Furthermore, transdermal delivery has the

advantage of bypassing first-pass metabolism and gastric stasis in an acute migraine attack, leading to a rapid response.¹⁶ There are three double-blind randomized controlled trials from Iran on the utilization of medicated oils. One used chamomile oil (versus placebo) in the temporal and forehead areas, and beyond the ears where it significantly ($p < 0.001$) reduced pain as well as photophobia, phonophobia, nausea and vomiting in acute migraine attacks within 30 minutes of application.¹⁷ Anise oil cream was also found to significantly reduce the duration of migraine as well as frequency.¹⁸ Contrastingly, no significant benefit was observed from topical application of rose oil, although the intervention was identical to the above two studies. Subgroup analyses revealed that rose oil is beneficial in patients with 'hot' migraine headaches but not for those with 'cold' type headaches.¹⁶ The inference from these studies is that the response to these preparations is individualized. Careful selection of patients who may benefit is needed to conduct further trials. Currently in a context where acute treatments for migraine remain limited and costly, massage oils as add-on therapy is a fair consideration.

Phytotherapy

Phytotherapy is the use of herbs or plant products in the treatment and prophylaxis of diseases. It is a key component of many traditional systems of medicine. A review of 12 studies which utilized Ayurvedic polyherbal formulations or herb-mineral formulations found phytotherapy to be clinically beneficial in the management of migraine.¹⁹ However, this review was limited by small sample size, short follow up, and nonspecific outcome measures. A study on Kampo (Japanese herbal) medicine for primary headaches as an acute treatment showed no significant difference in response between Kampo and non-steroidal anti-inflammatory drugs (NSAIDs). Therefore, the authors suggest that Kampo may be used as an alternative to NSAIDs as acute treatment for primary headaches.²⁰ Although promising, the 1-week follow-up period in this study is likely to be inadequate to draw definite conclusions.

In Sri Lankan indigenous medicine, several plants have been utilized for headache in a medicinal capacity, as listed in Table 1. A total of 35 plants belonging to 22 families have been identified in Sri Lankan traditional medicine for this purpose. Most of these plants belong to the Fabaceae (11.4%), Lamiaceae (11.4%) and Celastraceae (8.5%) families. Studies have found that plant species belonging to these families possess analgesic, anti-inflammatory and antioxidant properties.²¹ Evidence from Iranian traditional medicine suggests that these effects are best achieved via nasal delivery.²² Further trials are necessary to determine the optimal method of preparation, delivery, and dosing of these plant products.

As many patients do not declare their consumption of herbal remedies it is important to be aware of potential adverse effects. Although the biologically active constituents of these treatments are considered safe for consumption, some may contain adulterants. Asian herbal medicines have been found to contain heavy metals (arsenic, mercury) and undeclared prescription drugs. Abortive drugs (acetaminophen and NSAIDs) as well as preventive anticonvulsants, indomethacin

and steroids have been found in herbal preparations.²³ Another area of concern is the potential to cause medication-overuse headaches. In a study carried out among 2100 participants in Nepal, it was found that 87% of those with medication overuse headache were using allopathic medication and 13% consumed medicinal plants.²⁴ Therefore, herbal remedies should be considered as medicines and may be harmful if consumed without guidance from a registered Ayurvedic practitioner.

TABLE 1 Plants used for headache in Sri Lankan indigenous medicine^{21,25}

Family name	Scientific name	Local name (Sinhala/Tamil)	Parts used
Acanthaceae	<i>Justicia adhatoda</i> L.	Adhathoda (S), Agal adara (S), Pavatta (S), Adahtodai (T), Pavettai (T)	Leaves
Amaranthaceae	<i>Aerva javanica</i> (Burm.f.) Juss. ex Schult.	Polpala (S), Srim-pulai (T)	Roots
Amarylidaceae	<i>Crinum asiaticum</i> L.	Tholabo (S), Vichamunkil (T)	Roots
Amaryllidaceae	<i>Allium ascalonicum</i> L.	Rathu lunu (S), Irravengayam (T)	Bulbs
Apocynaceae	<i>Vincetoxicum indicum</i> var <i>indicum</i> (Burm.f.) Mabb.	Bin-nuga (S), Kagittam (T)	Roots
Apocynaceae	<i>Vincetoxicum indicum</i> var <i>glabrum</i> (Decne.) A. Kidyoo	Mudu bin-nuga (S)	Roots
Asteraceae	<i>Centipeda minima</i> (Linn.) A.Br.& Aschers	Heen-kimbu (S), Wisa duli (S), Marukolunthu (T)	Whole plant, seeds
Barringtoniaceae	<i>Barringtonia acutangula</i> (L.) Gaertn.	Ela midella (S), Adambu (T)	Seeds
Boraginaceae	<i>Cordia dichotoma</i> Forst.f.	Lolu (S), Naruvilli (T), Vidi (T)	Bark, fruits
Capparaceae	<i>Cleome gynandra</i> L.	Vela (S), Kadugu (T), Velai (T),	Leaves
Celastraceae	<i>Kokoona zeylanica</i> Thw.	Kokum (S)	Inner bark
Celastraceae	<i>Celastrus paniculatus</i> Willd.	Duhudu (S), Kalambram (T)	Seeds
Celastraceae	<i>Elaeodendron glaucum</i> (Rottb.) Pers.	Neralu (S), Thamaruja (T)	Leaves
Cucurbitaceae	<i>Momordica charantia</i> L.	Karawila (S), Pakal (T)	Fruit
Cucurbitaceae	<i>Lagenaria siceraria</i> (Mol.) Standley.	Diya labu (S), Shorakkai (T)	Seeds
Ericaceae	<i>Rhododendron arboreum</i> ssp. <i>zeylanicum</i> (Booth) Tagg	Maha rathmal (S), Alingi (T), Billi (T)	Young leaves
Euphorbiaceae	<i>Ricinus communis</i> L.	Erandu (S), Thel Erandu (S), Aimugi (T)	Leaves
Fabaceae	<i>Piliostigma racemosum</i> (Lam.) Benth	Maila (S), Arai (T), Atti (T)	Leaves
Fabaceae	<i>Guilandina bonduc</i> L.	Kumburu wel (S), Kalu Wau letiya (T), Punaikkalaichchi (T)	Seeds
Fabaceae	<i>Pterocarpus santalinus</i> L.f.	Rath handun (S), Atti (T)	Wood

(Continued)

Fabaceae	<i>Sesbania grandiflora</i> (L.) Poir.	Kathuru murunga (S), Acham (T), Agatti (T)	Leaves, Flowers
Lamiaceae	<i>Leucas zeylanica</i> (L.) W.T. Aiton	Geta thumba (S), Mudi tumpai (T)	Leaves
Lamiaceae	<i>Pogostemon heyneanus</i> Benth.	Gas kollan kola (S),	Leaves
Lamiaceae	<i>Vitex leucoxylon</i> L.f.	Nebedda (S), Kaddu nochci (T)	Leaves
Lamiaceae	<i>Vitex negundo</i> L.	Nika (S), Nirkkundi (T)	Leaves
Malvaceae	<i>Abelmoschus angulosus</i> Wall. ex Wight & Arn.	Kapukinissa (S), Kasturivendai (T)	Leaves and roots
Poaceae	<i>Chrysopogon zizanioides</i> (L.) Roberty	Sevandara (T), Vettiver (T)	Roots
Rutaceae	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Dehi (S), Ambu (T)	Leaves
Sapindaceae	<i>Schleichera oleosa</i> (Lour.) Oken	Kon (S), Kula (T), Puvu (T)	Seeds
Selaginellaceae	<i>Bryodesma wightii</i> (Hieron.) Sojak.	Sanjeewa (S)	Whole plant
Solanaceae	<i>Hyoscyamus niger</i> L.	Korasani (S), Kurasaniyomam (T)	Seeds
Solanaceae	<i>Solanum americanum</i> Mill.	Kalukamberiya (S), Manattakali (T)	Whole plant
Ulmaceae	<i>Girardinia diversifolia</i> (Link) Friis	Gas kahambilya (S)	Leaves
Zingiberaceae	<i>Globba marantina</i> L.	Hinguru piyali (S), Kachula-kelangu (T)	Rhizome
Zingiberaceae	<i>Kaempferia galanga</i> L.	Hinguru piyali (S), Kachula-kelangu (T)	Rhizome

Dietary supplements

The American Headache Society (AHS) and American Academy of Neurology (AAN) previously incorporated supplements into their guidelines for migraine prevention. Grade A (recommendation was available for butterbur, Grade B (probably effective) for feverfew, magnesium and, riboflavin and Grade C (possibly effective) for Co-enzyme Q.²⁶ These guidelines were retired after butterbur was found to be hepatotoxic.²⁷ Pending updated guidelines, new evidence has emerged from several randomized controlled trials conducted in Iran.^{28,29} Folic acid, in addition to pyridoxine supplementation was found to significantly decrease severity, frequency and attack duration in migraine with aura. However folic acid alone showed no beneficial effects.²⁹ Alpha-lipoic acid (ALA) supplementation also significantly reduced frequency and severity of episodic migraine. These effects of ALA, a co-factor for complex multi-enzymes, were found to occur due to improved mitochondrial and endothelial function.²⁸ In contrast, a large population-based cross-sectional study including 15,414 participants from Taiwan sheds concern on the use of supplements. Researchers found that use of isoflavones by men, and vitamin B complex, vitamin C, and green algae supplements by women were significantly associated with a higher likelihood of headache. However, as this was a cross-sectional survey, and as it was not ascertained why supplements were being taken (headache prevention or

for another health reason), no associations could be drawn regarding supplements and headaches.³⁰ Until further evidence is available, recommendations on the use of supplements should be made with caution.

Ayurveda practice in Sri Lanka

The practice of Ayurveda has a long history in Sri Lanka dating back to the time of the ancient kings. Currently, it forms part of the National Health Service, provided by the government, which includes a separate ministry for indigenous medicine. In addition to graduates from the Ayurveda universities, many local healers also practice indigenous medicine in Sri Lanka using time tested treatments handed down through the generations. In the Ayurvedic scriptures, *Charaka* and *Sushruta*, headache occurs due to the imbalance of the three “*Dosha*”s; *Vata* (air and space elements), *Pitta* (fire and water elements) and *Kapha* (earth and water elements). It is said that migraine is caused by dysregulated *Vata* alone or together with *Kapha*. Treatment modalities include *Shodhana* (purification) procedures *Nasya* (nasal instillations) and *Virechana* (therapeutic purgation), as well as *Shamana* (pacifying) therapies in the forms of *Kasaya* (herbal liquid), *Kalka* (pastes) and *Guli* (tablets).¹⁹ Another technique used in Sri Lanka is the application of a *Hisa kudichchi*, a medicinal pack made of herbal leaves on to the patient’s head for

approximately 15 minutes. It is said that this treatment allows the patient to feel cool and free of a heavy head.³¹ Although many such traditional Sri Lankan practices exist in not only in Ayurveda but also in Desheeya Chikitsa, Sidda and Unani, they are not widely known and are not routinely shared with the practitioners of Western medicine.

Other

Chiropractic manipulation, cupping, and hirudotherapy (application of leeches) are traditional complementary medicine approaches that have been used by patients with headache, with variable results.³² Chiropractic treatment includes spinal manipulation, strengthening and stretching exercises, heat or ice massage, and trigger point injections. These are practiced not only in Asia, but worldwide. A Canadian expert committee performed a review of guidelines on the chiropractic treatment of adults with headache to provide evidence-informed practice recommendations in 2011.³³ The authors conclude that spinal manipulation and multimodal multidisciplinary interventions are recommended for episodic or chronic migraine as well as for cervicogenic headache (Grade of recommendation-B).³³ An individualized regime based on clinical experience is recommended. Cupping is the practice of creating local suction on the skin by applying heated cups. It may be accompanied by superficial skin cuts (wet cupping) or done in isolation (dry cupping). This method is practiced in East Asia and in Persian medicine for headache management. A meta-analysis of six randomised controlled trials with 510 migraine patients showed that cupping could improve migraine symptoms without significant adverse effects.³⁴ However, the quality of evidence was declared as low with risk of bias and imprecision. Leech therapy is practiced throughout Asia and its efficacy in the management of migraine in Sri Lanka has been reported in a World Health Organization (WHO) review of Sri Lankan traditional medicine.⁶ Nevertheless, there is insufficient literature on hirudotherapy as a treatment option to make evidence-based recommendations for headaches.

Scope for research

The use of CAM for headache is a hitherto unexplored area for research in Sri Lanka. A multidisciplinary approach to the identification of biologically active compounds in medicinal plants used in headache would also be beneficial. Further research into their pharmacodynamic and pharmacokinetic properties could help in identifying the correct dosing, frequency, and route of administration. This can be done in collaboration with Ayurvedic practitioners. Such studies may also contribute to the development of new abortive and preventive medications for headaches at a lower cost.

CONCLUSION

The use of CAM for headache is prevalent worldwide, especially in Asian countries. Limited availability and high costs of effective pharmacotherapy for headache management are likely contributors to the use of CAM in this region. Researchers have proven the efficacy of complementary medicine for the management of headaches including migraine, tension type headache and cervicogenic headache. Adverse effects of CAM have been found to be minimal, and often less than those of prescription medications. However, potential harmful effects may also occur, including heavy metal poisoning and medication overuse headache. A discussion between the patient and the treating physician regarding the use of CAM is therefore advised. This will empower the patient to make rational decisions about their health, while strengthening the doctor-patient relationship.

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