

CLINICAL
REFLECTION

Non-Western interventions for stress reduction and resilience

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First received 6 Jul 2020
Final revision 22 Jan 2021
Accepted 26 Jan 2021

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SUMMARY

Complementary and integrative medicine provides safe, low-cost, effective treatments for conditions ranging from everyday stress to post-traumatic stress disorder. The evidence for herbs, nutrients and mind–body practices is growing, despite disproportionately small amounts of financial support compared with funding for expensive pharmaceuticals. The unsustainable cost of conventional treatments, the moral imperative to care for millions of uninsured and the impact of COVID-19 compel us to fully explore known and potential benefits of treatments being used by complementary and integrative practitioners.

KEYWORDS

Coronavirus; post-traumatic stress disorder; mind–body; paced breathing; mass disaster.

Ancient peoples endured and recovered from life stressors by using herbs, group rituals, chanting, breathing practices, drumming, dancing and shamanic journeys. Over the past 5000 years, such activities have become more sophisticated through the development of religious organisations, yoga, qigong, tai chi, martial arts, agriculture, herbal medicine formulations, massage and acupuncture (Gerberg 2016, 2017). Voluntarily regulated breathing practices have been used by tribal and modern cultures to enhance health, group bonding, spirituality and combat readiness. For example, linguistic evidence suggests the use of breathing practices in the ancient Igbo language of Nigeria: the word for lungs, *ngungu*, derives from the ancient word *gugu*, which means ‘to heal’ (Nwosu 2013: p. 69). Today mind–body practices are being studied and adapted to address the global epidemic of stress and trauma because, compared with conventional Western treatments, they are generally less expensive, safer, simpler, more acceptable and more accessible for large groups of people suffering from stress (Box 1).

Anti-anxiety and anti-stress phytomedicines

Researchers are probing mechanisms of action and documenting therapeutic applications of herbal formulas, for example Japanese Kampo, Indian

Ayurveda, traditional Chinese medicine, traditional Tibetan (*Sowa-Rigpa*), Iranian (*tebbe sonnati-e irāni*) and African medicine (*yorùbá* or *egbo’gì*), Aboriginal medicine, medicines of native tribes of the Americas and European herbal medicines.

The most powerful, well-studied anti-stress herbs are the adaptogens and their extracts, which have been shown to increase the ability of organisms to tolerate, survive and perform under a wide range of stressors, including physical, psychological, chemical, toxic, infectious, carcinogenic, hypoxic and thermal stresses, radiation and exhaustion: *Rhodiola rosea*, *Panax ginseng*, *Schisandra chinensis*, Siberian ginseng (*Eleutherococcus senticosus*) and ashwagandha (*Withania somnifera*). Other herbs with some adaptogenic properties include: maca (*Lepidium meyenii*), saffron (*Crocus sativus*) and maral root (*Rhaponticum carthamoides*). Genomic studies reveal up- and downregulation of hundreds of genes by adaptogenic herbs such as *R. rosea*, with changes in activation patterns when herbs are combined, as in formulas containing *R. rosea*, *E. senticosus*, and *S. chinensis* (Brown 2009a; Gerberg 2017).

Reviews of randomised controlled trials (RCTs) found significant benefits with: rhodiola or arctic root (*Rhodiola rosea*, 8 RCTs, stress, anxiety, depression, fatigue, energy, cognitive function), ginkgo (*Ginkgo biloba*, 9 RCTs, energy, cognitive function), brahmi (*Bacopa monnieri*, 6 RCTs, cognitive function), saffron (*Crocus sativa*, 12 RCTs, anxiety and depression), kava (*Piper methysticum*, 5 RCTs, short-term use for anxiety, has misuse potential), ashwagandha (*Withania somniferum*, moderate benefits for stress), kanna (*Sceletium tortuosum*, connectivity study showed reduced amygdala–hypothalamus coupling), sage (*Salvia officinalis*, mild effects for insomnia), lemon balm (*Melissa officinalis*, mild effects for anxiety and insomnia), passionflower (*Passiflora incarnata*, 6 RCTs, mild acute effects for anxiety), chamomile (*Matricaria recutita*, mild effects on insomnia), lavender (*Lavendula angustifolia*, weak effects for anxiety and insomnia), valerian (*Valeriana officinalis*, mild effects on anxiety, insomnia) (Brown 2009a; Gerberg 2017; Yeung 2018; Mendelson 2020).

Although the reviews of clinical trials of phytomedicinals noted above included only RCTs, there is

BOX 1 Resources on complementary, alternative and integrative mental health

Academic Consortium for Integrative Medicine and Health: <https://imconsortium.org/training-jobs/fellowships/>

American Botanical Council: <http://abc.herbalgram.org/>

American Psychiatric Association Caucus on Complementary, Alternative and Integrative Medicine: <https://www.psychiatry.org/psychiatrists/practice/professional-interests/integrative-medicine>

Integrative Medicine for Mental Health (IMMH): <http://www.immh.org>

International Network of Integrative Mental Health (INIMH): <https://www.alternativementalhealth.com/join-inimh/>

National Center for Complementary and Integrative Health (NCCIH): <https://nccih.nih.gov/>

No Limit Generation – teaching videos for caretakers of refugee children: www.nolimitgen.org

Rethink Mental Illness: information and services: <https://www.rethink.org/>

Information on complementary, alternative and integrative medicine related to mind–body practices, herbs and nutrients: www.breath-body-mind.com

Non-profit mental health education and support: <https://www.mind.org.uk/information-support/drugs-and-treatments/complementary-and-alternative-therapies>

Resources for young people who are struggling: <https://www.childline.org.uk/>

Information on supplement quality: www.examine.com

Information on supplement content and quality: www.consumerlab.com

Complementary and alternative medicine – information and support: <https://www.mind.org.uk/information-support/drugs-and-treatments/complementary-and-alternative-therapies/about-complementary-alternative-therapies/>

heterogeneity in the quality of the trials and limitations related to the number of participants, masking and researcher alliance. The cited reviews address these issues in more detail.

A common misconception among reviewers of herbal studies is that *in vitro* effects on cytochrome P450 isozymes translate into increased risks for herb–drug interactions in humans (*in vivo*). This is often not the case because digestion and metabolism convert herbal constituents into secondary metabolites, which may be completely benign or have opposite effects to those of whole extracts *in vitro* (Gerbarg 2017).

The quality and potency of herbal extracts is critical for efficacy. Resources for assessing supplement quality are listed in Box 1.

Mind–body methods, attentional focus, interoception and awareness for stress reduction

Clinical studies with modern research methodologies are revealing the underlying mechanisms by which mind–body techniques can improve psychophysiological states in stress-related mental and physical disorders. Convergent evidence indicates rapid relief of anxiety and stress using voluntarily regulated breathing techniques (e.g. coherent breathing and pranayama), enhanced by movement (e.g. qigong and tai chi), postures (e.g. yoga asanas), attentional focus, interoceptive awareness (the perception of sensations arising from inside the body), visualisation and meditation. Knowledge gained from biological markers of stress (e.g. cortisol, oxidative stress), brain imaging, electroencephalography, neurotransmitter levels, neurohormone tests and psychological measures is being used to improve the efficacy of mind–body programmes

(Brown 2009b; Gerbarg 2017, 2018). Key mechanisms of action supported by human studies indicate: reduction of overactivity of the sympathetic nervous system and activation of the vagal parasympathetic system and gamma-aminobutyric acid (GABA) transmission, increased heart rate variability and brainwave entrainment. These mechanisms are associated with and can improve attention, cognitive function, long-term potentiation, emotion regulation, compassion and neuroplasticity, as well as inflammation, anxiety, depression, pain and insomnia (Gerbarg 2017, 2018; Porges 2017).

Other modalities

Robust data support the use of acupuncture for pain management. A meta-analysis concluded that acupuncture is effective for chronic musculoskeletal pain, headache and osteoarthritic pain (Vickers 2018). The beneficial effects of acupuncture persisted over time and could not be attributed to a placebo effect. Reviews find evidence that acupuncture is moderately beneficial for anxiety and mood disorders (Bazzan 2014).

Although the evidence base is not as robust, other modalities supported by clinical trials showing stress reduction include music, active drumming, singing, visualisation, imagery, aromatherapy and being in nature (ecotherapy). Most of our 300 000 years of hominid evolution occurred in small, tightly knit groups living in natural settings. It has been argued that the dissonance caused by living in urban environments contributes to stress states. Studies of *shinrin-yoku* (forest bathing) found indicators of reduced stress levels, including salivary cortisol, heart rate variability-related sympathetic and parasympathetic nervous system activity, blood pressure and pulse rate (Hanson 2017).

Lifestyle and nutrition

Unhealthy lifestyles and eating habits contribute to stress-related disorders. Conversely, stress and depression can exacerbate poor eating and sedentary behaviour. Diets high in sugar, saturated fats, red meats and processed foods, especially in children, have been associated with poorer mental health. In contrast, studies of the Mediterranean diet, which encourages more fresh fruits, vegetables, nuts and whole grains, show beneficial effects on depression and stress biomarkers. However, large-scale studies are still needed to assess the potential effects of specific diets on the severity of stress-related illnesses.

Mechanisms proposed to explain how diet can affect anxiety and mood include: deficiencies of vitamins and nutrients that are essential to sustain brain functions; blood sugar fluctuations; and effects on the microbiome (gut bacteria) that influence absorption of nutrients as well as inflammation (which is associated with depression) (Sarris 2015).

Substantial evidence indicates that supplemental nutrients, used alone or in combination, could support biochemical pathways involved in antioxidant and anti-inflammatory defence, mitochondrial support, neurotransmission, stress response and mood disorders. Well-studied nutrients include: S-adenosyl methionine (SAMe), N-acetyl cysteine (NAC), acetyl-L-carnitine (ALCAR), zinc, B vitamins, folic acid, vitamin D and omega-3 fatty acids (Bottiglieri 2017; Massoumi 2019).

Summary

Interest in non-Western approaches to stress reduction is rapidly growing, driven by the urgent need for safe, lower-cost, effective care for people burdened by the everyday pressures of modern life as well as for the millions affected by disasters, wars and displacement. Quality research and field trials are needed to understand, improve and integrate ancient healing techniques into the modern practice of medicine.

Author contributions

The ideas for this article derive from the research and clinical experience of both authors. P.L.G. and R.P.B. contributed equally to the writing and editing of this manuscript. P.L.G. created the first draft of the article.

Funding

This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

Declaration of interest

P.L.G. and R.P.B. teach mind–body practices. They have accepted speaker fees, programme fees and travel expenses from Leading Edge Seminars, Inc., as well as from non-profit and academic organisations. They also receive payments for their books and royalties. They serve on the Board of The Breath-Body-Mind Foundation, a tax-exempt non-profit organisation whose mission is to provide programmes and training to underserved populations worldwide. Some of their books contain educational information about mind–body practices. With Dr Chris Streeter, they received a grant from the National Institutes of Health for research on the effects of mind–body practices on depression and thalamic gamma-aminobutyric acid. R.P.B. holds a patent for the use of 7-keto dehydroepiandrosterone for treatment of post-traumatic stress disorder. He owns shares in Humanetics.

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