

Advancing Research on Traditional Whole Systems Medicine Approaches

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Abstract

While the intention of Integrative Medicine (IM) is whole person medicine, it has for the most part remained driven by individual modalities. Like the practice of IM itself, IM research too has been driven primarily by studies on individual modalities. There are significant challenges to moving research on whole systems medicine forward, with funding being at the top of the list. Historically, NIH has not been receptive to supporting research on whole systems, preferring instead to support studies that are more individual modality driven so that mechanisms can be identified. Purely mechanistic research, however, assumes unidirectional causality and linear responses yet clinical responses to whole systems approaches are more often multidirectional and dynamically unpredictable. The concept of emergence is applicable here. Whole systems approaches suggest that by incorporating therapies into holistic treatment programs we not only treat symptoms but accomplish more by activating the body's inherent self-organizing healing mechanisms and treat the root cause of illnesses as well as associated symptoms. Given that interest in integrative therapies with the general public and medical community is steadily increasing, there is need for more research that explores intact whole systems approaches to elucidate the relevant system-wide effects and dynamic interactions related to these practices.

Keywords

traditional whole systems medicine, integrative medicine, research

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Consistent with how traditional Western medicine is most often practiced, biomedical research too has historically been reductionist, with the focus being almost exclusively on examining a single treatment to discover its potential efficacy for a specific symptom and/or disease.^{1,2} A primary purpose of the biomedical literature is to inform the direction of medical practice, and limitations in research methodologies greatly limits potential advances in medicine. The degree to which the reductionist approach to biomedical research has impeded discovery of a sustainable health care model in the United States is an open question.^{3,4}

Integrative medicine is most often defined as the integration of complementary practices and therapies such as meditation, yoga, and/or acupuncture within the allopathic medical setting for the purposes of alleviating illness and creating health.⁵ The converse also applies in that Western biomedical approaches have been integrated into hospitals and clinics of traditional medical systems from where the many complementary practices and therapies originated.⁶⁻⁹ Both these integrative approaches present challenges to the existing systems^{5,8} With

regard to the latter model, for example, pressure in Lhasa Tibet to integrate Western-oriented biomedicine into traditional Tibetan medicine hospitals has led to standardized policies such as administering antibiotics to all inpatients, policies that trump the traditional practices and have undermined traditional Tibetan physician's diagnostic and therapeutic methods.⁸

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modalities.^{10,11} That is, the ideals of traditional whole systems approaches like ayurvedic, Tibetan, and traditional Chinese medicine,^{6,7,9} as well as naturopathic,^{12,13} anthroposophic,¹⁴ and Native American medicine,¹⁵ among others, are not yet being fully realized among most integrative practices.

Like the practice of integrative medicine itself, integrative medicine research too has been driven primarily by studies on individual modalities. This has been recognized for many years, with calls to advance the conduct of truly integrative research.¹⁶⁻¹⁸ The most recent such call by the Academic Consortium for Complementary and Alternative Health Care presented consensus recommendations to the National Center for Complementary and Integrative Health (NCCIH).¹⁸ In addition to recommendations for NCCIH to expand its funding for collection of outcome data related to costs and furthering support for capacity building within complementary and integrative health disciplines, the consensus statement presented a strong case to prioritize research based on whole disciplines.¹⁸

Granted, much of the growth and success of integrative medicine has been the result of the impressive accumulating body of evidence-based literature on individual complementary practices and therapies across a broad range of medical needs.¹⁹⁻²¹ Despite this advance, however, few integrative studies have actually taken a truly integrative, whole systems approach.

To demonstrate this, the table below presents results of a Pub Med.gov search of a number of single complementary practices and therapies that are typically found in the whole medical system Ayurveda. Ayurveda is a traditional medicine system for which there are numerous studies demonstrating effectiveness of individual treatment modalities.^{6,22-27} The column on the left shows the search term of each respective individual modality, while the column on the right shows the observed number of publications for that individual modality (search conducted August 2017).

Modality	Number of Publications
Meditation	4493
Yoga	4072
Massage	13417
Therapeutic herbs	5003

What happens when we repeat the search, but this time incrementally combine each single modality together? As shown in the table below, with each incremental step, the number of citations decreases drastically, indicating an absence of research publications reporting on the integrity of the whole system as it was intended to be practiced.

Combining Modalities	Number of Publications
Meditation	4493
Meditation and yoga	895
Meditation and yoga and massage	65
Meditation and yoga and massage and therapeutic herbs	2

Note that we do acknowledge that potential limitations in the keywords used in some published articles could lead to their omission from the search. Even with that consideration, however, the trend would be clear. When we repeated the search and added the search term “acupuncture,” a component of traditional Chinese and traditional Tibetan medicine, the significant diminishment in respective numbers of publications are much the same.

There are, fortunately, a growing number of studies attempting to more comprehensively assess whole medical systems effects. For example, a pilot study in a small cohort of patients with coronary heart disease examined the effects of an ayurvedic intervention program that included diet, herbs, yoga, meditation, and breathing exercises²⁸ and reported improvements in low-density lipoprotein cholesterol, triglycerides, and arterial pulse wave velocity. The study also reported that a majority of hypertensive patients in the trial were able to reduce or eliminate their antihypertensive medications. Other such studies examining intact ayurvedic programs report improvements in wellbeing and metabolomics pathways, including phospholipid biosynthesis and lipoprotein metabolism.^{29,30} Other studies not focused on traditional medical systems per se include Zeng et al³¹ who reported on outcomes of 2 intensive lifestyle modification programs (the Cardiac Wellness Program of the Benson-Henry Mind Body Institute and the Ornish Program for Reversing Heart Disease) on cardiac patients and demonstrated significant reductions of 43% on average medical costs. Reductions in cardiac and noncardiac hospitalization rates and a trend toward lower mortality were also demonstrated.³¹ Bredesen et al^{32,33} provided evidence for an integrative approach comprised of customized nutrition and dietary supplements, oral hygiene, meditation, and yoga practice that improved cognition and memory in individuals with Alzheimer’s disease. Oberg et al¹³ and Bradley et al¹² reported on naturopathic medicine’s whole systems approach, which emphasized patient-centered health promotion and routine use of clinical counseling on wellness and prevention, improving outcomes for individuals with type 2 diabetes.

There are significant challenges to moving this type of research forward, with funding being at the top of the list. Historically, the National Institutes of Health has not been receptive to supporting research on whole systems approaches, preferring instead to support studies that are more individual modality driven so that mechanisms can be identified. This individual modality mechanism approach is in contrast to whole systems research where the focus is not to examine the effects of each of separate practice and/or therapy but rather an evaluation of the impact of the system in its entirety. NCCIH, which exists to support scientific research on “diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine” does not support research on whole systems. While there has been efforts in the past for NCCIH to support whole systems research (then the National Center for Complementary and Alternative Medicine),¹⁶ these efforts did not gain traction within the agency. In a recent interview, NCCIH director Josephine Briggs, MD, expressed that we have not yet quite figured

out what right experimental approaches are needed to research systems.^{34,35} Dr Briggs also recently noted, “those interested in whole systems need to develop standardized, multimodality protocols to domesticate the wildness of integrative personalization”.¹⁷ NCCIH’s 2016 Strategic Plan, while addressing strategies to develop “new and improved research methods and tools for conducting rigorous studies of complementary health approaches and their integration into health care,” does not place emphasis on whole systems research (<https://nccih.nih.gov/about/strategic-plans/2016>).

More whole systems studies need to be conducted to examine the potential beneficial, multidimensional effects of these approaches to healing. Mechanistic research assumes unidirectional causality and linear responses; however, clinical responses to whole systems approaches are often multidirectional and dynamically unpredictable. The concept of emergence, or that the whole is greater than the sum of its parts as a result of self-organization, is applicable here.^{36,37}

Given that a primary purpose of the biomedical literature is to inform the direction of medicine, in order to fully inform the practice of integrative approaches, the research itself will need to become increasingly more integrative. This requires an experimentally rigorous yet integrative approach to empirically identify markers of both health and disease and to describe the behavior of the system and environmental interactions. Such research on intact whole systems often requires strong collaborations across a broad range of disciplines. Organizations such as the Academic Consortium for Complementary and Alternative Health Care and health care provider organizations like the Academy for Integrative Health and Medicine could help further advance this work by educating its members on practice-based research methodologies, and encourage research on the whole systems approaches within their respective organizations.

In summary, the era of integrative medicine has already dawned and substantial evidence exists to support probing more deeply into its holistic potential, which has yet to be fully determined. But if indeed the whole is greater than the parts, the public deserves to know if the current benefits of integrative medicine can be greatly expanded into more whole systems approaches to well-being.¹⁶ Whole systems approaches suggest that by incorporating therapies into holistic treatment programs we not only treat symptoms, but accomplish more by activating the body’s inherent self-organizing healing mechanisms and treat the root cause of illnesses as well as associated symptoms.³⁸ Thus, given that interest in integrative therapies with the general public and medical community is steadily increasing, there is a need for studies that explore whole systems research approaches to elucidate the relevant system-wide effects and dynamic interactions related to these practices.

Author Contributions

Paul J Mills, Sheila Patel, Tiffany Barsotti, Christine Tara Peterson and Deepak Chopra helped with the conceptualization and writing of the manuscript. Paul J Mills managed manuscript revisions. All authors read and approved the final manuscript.

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Ethical Approval

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