



The integration of complementary and integrative health and whole person health in gastrointestinal disorders: a narrative review

Meredith R. Craven^{1^}, Elyse R. Thakur^{2,3,4^}

¹Division of Gastroenterology, Stanford University, Palo Alto, CA, USA; ²Section on General Internal Medicine, Wake Forest University School of Medicine, Winston-Salem, NC, USA; ³Section of Gastroenterology and Hepatology, Atrium Health, Charlotte, NC, USA; ⁴Department of Psychiatry & Behavioral Sciences, Baylor College of Medicine, Houston, TX, USA

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Correspondence to: Meredith R. Craven, PhD, MPH. Division of Gastroenterology, Stanford University, 430 Broadway Street, Pavilion C, 3rd Floor MC: 6341 Redwood City, CA 94063, USA. Email: mrcraven@stanford.edu.

Background and Objective: Complementary and integrative health (CIH) approaches are increasingly popular among patients with gastrointestinal (GI) disorders. Whole person health has been identified as an important perspective in integrative health. While complementary approaches have been discussed in the GI literature, the whole person health framework has not yet been incorporated. Whole person health is particularly relevant as we shift to patient-centered care to facilitate holistic healing for this population. The aim of this paper is to apply a conceptualization of whole person health and its relevance in understanding how CIH approaches can be utilized for patients with stress-sensitive GI disorders, such as disorders of gut-brain interaction (DGBI) and inflammatory bowel disease (IBD).

Methods: Between July 2023 and December 2023 numerous major databases were reviewed to identify relevant articles for this narrative review. Keywords searched included (but not limited to) complementary alternative medicine, integrative medicine, DGBI, IBD, whole person health, and CIH categories (nutritional, mind-body, psychological). We limited our search to peer-reviewed English language articles. Studies were also cross-referenced to incorporate additional relevant studies.

Key Content and Findings: This narrative review describes how to integrate CIH approaches with whole person health for patients with some of the most common stress-sensitive GI disorders, including DGBIs and IBD. In each section, we highlight how each domain of the whole person health framework (biological, behavioral, social, environmental) can be addressed through CIH approaches: psychological, mind-body practices, and nutritional.

Conclusions: The integration of CIH approaches into the treatment of GI disorders is a growing area of interest that holds promise for enhancing patient outcomes. The two concepts of CIH and whole person health are harmonizing, and their integration serves to support patients who are already using CIH approaches, and providers who can facilitate shared-decision-making and patient-centered care. While not exhaustive, this review demonstrates positive associations between the use of CIH and beneficial outcomes across all whole person health domains for patients with GI disorders.

Keywords: Complementary and integrative health (CIH); complementary and alternative health; whole person health; disorders of gut-brain interaction (DGBI); inflammatory bowel disorder

[^] ORCID: Meredith R. Craven, 0000-0002-4400-7058; Elyse R. Thakur, 0000-0003-2242-2725.

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Introduction

Living with a chronic gastrointestinal (GI) disorder can be burdensome and impact important life domains, presenting complex challenges to both patients and providers. Many patients continue to experience high symptom burden despite conventional treatments, necessitating a holistic approach to management (1). Non-conventional treatment approaches are increasingly popular among patients with GI disorders given their potential to improve symptoms and enhance quality of life (2). These approaches are diverse, ranging from nutritional strategies and psychological interventions to mind-body practices; each approach addresses important facets of a patient's overall health. Non-conventional treatments are often utilized by patients with stress-sensitive disorders, including disorders of gut-brain interaction (DGBIs) (3,4) and among patients with overlapping conditions, such as inflammatory bowel disease (IBD) (5). Historically, these treatments have been described as complementary and alternative medicine (CAM), but this definition may be lacking, as “complementary” approaches are used in conjunction with conventional care and “alternative” approaches are used instead of conventional care. “Complementary and Integrative health” (CIH), more accurately reflects non-conventional treatment approaches in gastroenterology settings, as most patients often utilize complementary approaches in combination with conventional care (6).

The National Center for Complementary and Integrative Health (NCCIH)'s strategic plan for fiscal years 2021–2025 augments the definition of integrative health to include ‘whole person health’. Whole person health centers on “*empowering individuals, families, communities, and populations to improve their health in multiple interconnected domains: biological, behavioral, social, and environmental*” (7). This is particularly relevant for DGBIs and IBDs as the biopsychosocial model emphasizes that these disorders are maintained by reciprocal and complex interactions between brain-gut-microbiota pathways and psychosocial factors (8). The whole person health model acknowledges that patients with chronic diseases often present with comorbidities, many of which are common among patients with primary GI complaints including pain (9), fatigue (10),

anxiety (11), and stress (12,13), which are some of the driving factors in CIH use (14). This has prompted governing institutions to recognize that treatment approaches can and should include and address multiple domains, beyond pharmaceutical options. For example, the American College of Gastroenterology (ACG) and the American Gastroenterological Association (AGA) encourage the incorporation of multiple modalities for DGBI and IBD treatment (15-19). However, the integration of CIH and whole person health in GI disorders has not yet been extensively applied and further research is needed to bring CIH approaches to the forefront of clinical care. Beyond multidisciplinary treatments, there is also a growing call to action for an increased awareness about the role of culture in clinical care (20), which is an important variable when considering CIH approaches in the context of whole person health.

The aim of this narrative review is to apply a conceptualization of whole person health (biological, behavioral, social, environmental) and its relevance in understanding how CIH approaches can be utilized for patients with some of the most common stress-sensitive GI disorders, including DGBIs and IBD. In *Figure 1* we show the whole person health model in relationship to CIH components. In each section, we highlight how each domain of the whole person health framework can be addressed through CIH approaches: psychological, mind-body practices, and nutritional. We present this article in accordance with the Narrative Review reporting checklist (available at <https://tgh.amegroups.com/article/view/10.21037/tgh-23-121/rc>).

Methods

We reviewed numerous major databases (e.g., PubMed, Google Scholar) to identify relevant articles for this narrative review. Key words searched included (but not limited to) complementary alternative medicine, integrative medicine, DGBI, IBD, whole person health, and CIH categories (nutritional, mind-body, psychological). We limited search to peer-reviewed English language articles. We reviewed and categorized publications based on their CIH approaches (psychological, mind-body practices and

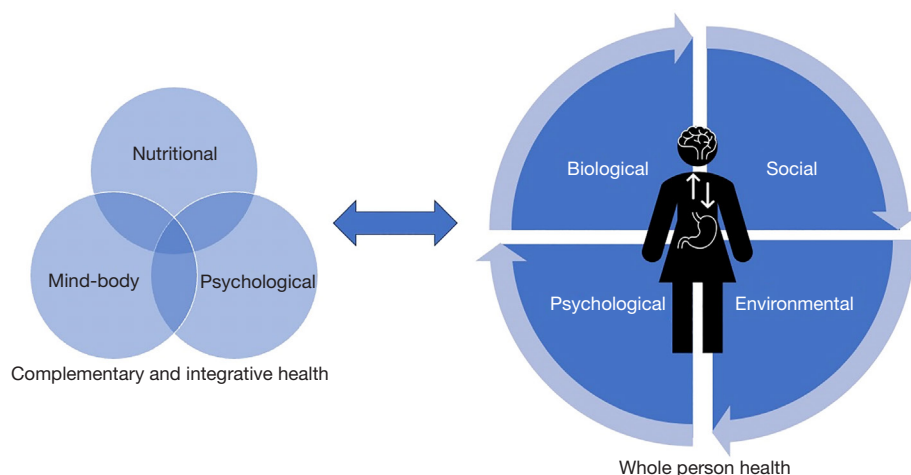


Figure 1 The integration of complementary and integrative health and whole person health.

Table 1 The search strategy summary

Items	Specification
Date of search	December 16, 2023
Databases and other sources searched	PubMed, Google Scholar
Search terms used	Complementary alternative medicine, integrative medicine, DGBI, IBD, whole person health, and CIH categories (nutritional, mind and body, psychological)
Timeframe	Databases searched up to December 16, 2023
Inclusion and exclusion criteria	Inclusion: peer-reviewed, English language Exclusion: non-English publications
Selection process	Author directed

nutritional) and organized relevant articles under each whole person health domain (biological, behavioral, social, environmental). Studies were also cross-referenced to incorporate additional relevant studies (*Table 1*).

Integrating whole person health and complementary and integrative health

Biology is the first domain in whole person health. Biological factors play a significant role in GI health, and CIH approaches can influence GI functioning via the brain-gut-microbiota axis, and through signaling pathways connecting the central nervous system (CNS) and enteric nervous system (ENS) (21,22). There is a wide range of CIH approaches, which may target brain-gut-microbiota pathways, and have a positive impact on GI functioning.

The second domain of whole person health is behavioral.

In the whole person health framework, behaviors are actions that can prevent illness, promote health and wellness, or worsen disease (7). Patients with chronic GI disorders must continuously engage in behaviors to effectively cope with and manage their symptoms. CIH approaches can support adaptive behaviors and, in themselves, be viewed as adaptive behaviors that enhance self-management.

The third domain of whole person health is social. Social factors, including the conditions in which people are born, grow, live, work and age, may also influence GI functioning and can be addressed with CIH approaches (7,23). From a biopsychosocial perspective, early social factors, cultural variables, and later social experiences, can be important factors in the development and maintenance of GI disorders (8,24). Accordingly, many CIH approaches are influenced by social factors, have been developed in various cultural contexts, and can be applied in social settings.

The fourth domain of whole person health is environmental. The physical environment in which one is born, raised, and ages influences their culture, beliefs, and health (7). Analogous to the bidirectional nature of the brain-gut axis, an individual's environment affects their health and opportunities for engagement in behaviors that promote or deteriorate health (25). It has been established that environment plays a significant role in the pathogenesis, expression, and subsequent management of GI disorders, and consequently it can serve as a CIH approach to aid in GI symptom management (24,26).

We introduce CIH approaches including psychological, nutritional and mind-body practices in the next section and highlight how each domain of the whole person health framework can be addressed using CIH.

Psychological approaches

Psychological approaches relevant for GI disorders include brain-gut behavior therapies, such as cognitive-behavioral therapy and gut-directed hypnotherapy, and related mind-body (e.g., meditation and mindfulness) and spiritual practices (e.g., prayer, or religious-based experiences).

Biological domain: psychological approaches

Brain-gut behavior therapies target stress sensitivity and alterations in CNS-ENS processing and specifically address brain-gut dysregulation (21). Eastern approaches, such as meditation and mindfulness, are regularly incorporated into brain-gut behavior therapies with benefit. Mindfulness is defined as paying attention to the present moment from a stance of curiosity and non-judgement (27). This practice of present awareness can be used in a variety of contexts (e.g., work, home, medical settings) to address biological drivers of CIH use (e.g., pain, fatigue, mood symptoms) (28). Mindfulness-based stress-reduction programs show a reduction in irritable bowel syndrome (IBS) symptom severity and improve stress-related outcomes (29). Research also demonstrates benefit of mindfulness-based interventions at improving stress, mood, and quality of life in patients with IBD (30). The benefits of spiritual practices are also emerging in the GI literature. Researchers recommend providers to consider the role of religion and spirituality for their patients with IBD, as many endorse religion as important in their life approach, which may impact treatment compliance (31). A study examining psychosocial-spiritual factors in patients with

functional dyspepsia (FD) found that symptomatic patients had more stressful life events, less belief in religion, and increased somatization, compared to their asymptomatic counterparts (32). Thus, the impact of spiritual variables should be considered in the biopsychosocial conceptualization and treatment considerations of GI disorders in future research and clinical contexts.

Behavioral domain: psychological approaches

A core teaching of mindfulness is that it allows for freedom of intentional choice, or for intentional behavior (27,33). Often, patients are caught in automatic pilot, during which they can engage in automatic and unhelpful overt behaviors including avoidance of meaningful activities, overly restricting their diet, and covert behaviors like getting trapped in GI symptom-specific anxiety and visceral hypervigilance (27,33). Mindfulness-based interventions can be particularly helpful for promoting healthy behaviors and for reducing unhealthy and harmful behaviors (34), including behaviors that exacerbate symptoms and drive symptom experience, like GI symptom-specific anxiety and catastrophizing (35-37). The ability to act with awareness, a facet of mindfulness that runs counter to automatic pilot, has been associated with improvements in GI symptoms and visceral sensitivity, and decreased covert behavior of GI symptom-specific anxiety among individuals with IBS (35,37). Among patients with IBD, acting with awareness has been identified as a potential protective factor given its influence on quality of life, perceived stress, and fatigue (38). Mindfulness can also enhance self-regulation (39,40), and has been associated with activation of the prefrontal cortex and with enhanced executive attention (41,42), all of which are important to behavioral regulation and behavior change (43).

Social domain: psychological approaches

Psychological factors, including early life social learning like illness behaviors, can influence the development and manifestation of GI disorders later on. For example, research has demonstrated that IBS, can be influenced by learned illness behaviors, as well as early GI symptoms, socioeconomic status, and trauma (44). Beyond early life factors, day-to-day social phenomena can also contribute to GI symptomatology. For example, dining is inherently a social experience; it is not surprising that some patients develop social anxiety in the context of dining with others especially, when their GI symptoms are exacerbated. This

is often addressed with brain-gut behavior therapies, such as cognitive behavioral therapy, in which patients are encouraged to identify and modify difficult thought patterns and reduce learned avoidance behaviors (45-47).

In addition, one's socio-cultural background can influence one's experiences and presentation of physical health symptoms. For example, Asian and Latino individuals are more likely to exhibit somatic manifestations of illness as opposed to psychological expression (48,49). This may impact the types of treatments these individuals respond best to. Indeed, it has been suggested that GI patients with a higher degree of somatization and pain respond best to modalities such as gut-directed hypnosis (50), as opposed to other brain-gut behavior therapies.

Environmental domain: psychological approaches

Nature-based therapy is a low-cost environmental approach that aims to promote relaxation and improve resistance to disease and stress (51-54). There are multiple forms of nature therapy including gardening, exercising or socializing in nature, and shinrin-yoku. Shinrin-yoku (forest bathing) is a Japanese practice of mindful immersion in nature with the intent to harmonize an individual with their environment, often a forest. Shinrin-yoku usually includes several CIH techniques that engage all senses, such as breathing, yoga, meditation, and walking to enhance relaxation and to promote the feeling of bathing in one's environment (51-54). Several systematic reviews and meta-analyses have demonstrated the benefits of nature-based interventions and shinrin-yoku including parasympathetic system activation, reduced blood pressure and feelings of stress, improved well-being, improved immune function, reduced inflammation, including interleukin (IL)-6, and fewer symptoms of anxiety and depression (51,53-55). One particular advantage is that one does not have to leave a city to find benefits of nature-based therapies as plants, watching videos of nature scenes, and local parks can all benefit health (51,55,56). While there does not appear to be much research among patients with GI disorders, one interventional study found that a 12-week nature-based stress management course among 33 Swedish women with work-related stress was associated with significantly improved GI symptoms (57).

Nutritional approaches

Nutrition is vital for GI and overall health. In CIH,

nutritional approaches are vast, including herbs, probiotics, mindful eating, and food as medicine.

Biological domain: nutritional approaches

Nutritional approaches include a variety of products that can directly influence biological processes including GI motility and inflammation. Natural products, some of which have been utilized for thousands of years, have a growing evidence base for use among patients with GI disorders. Deutsch and colleagues (2) discussed several natural products use for DGBI's in their recent review. We summarize some of the most commonly used products and their benefits from a biological perspective. Ginger is a common herbal product that has a positive effect on nausea and vomiting by enhancing GI motility as found in animal studies (58). Among humans with a variety of health conditions, ginger can reduce nausea and vomiting via anticholinergic and anti-serotonergic components (59). Peppermint and caraway have been found to reduce symptoms of FD in animal studies through inhibition of smooth muscle contraction (60), antiemetic properties (61,62), as well as spasmolytic effects (61,63). Psyllium, a form of fiber, acts as an osmotic bulking agent and decreases bowel transit time for patients with IBS; with several studies demonstrating improvement in bowel functioning (64,65). Finally, a systematic review and meta-analysis on fiber supplementation for IBS found that soluble fiber can improve global IBS symptoms by possibly acting as a prebiotic (66).

Behavioral domain: nutritional approaches

Patients with chronic GI conditions often have complicated relationships with food, including avoidance and distrust. Aversive consequences can occur, including conditioned food sensitivity, malnutrition, and eating disorders (e.g., avoidant restrictive food intake disorder) which are becoming more prevalent among patients with GI disorders (67,68). Mindful eating, a CIH nutritional approach, may be a behavior-based way to improve patients' relationship to food, and thus improve health and psychosocial outcomes. Mindful eating is the practice of consuming food with an intentional, non-judgmental, moment to moment, and curious approach. Mindful eating includes awareness of the five senses while preparing and eating food, and noticing the cognitive, physical, and emotional responses to eating (69,70). This CIH approach has been recommended as an intervention for patients with chronic GI conditions

because it can be safely delivered by non-mental-health professionals (71), it can increase awareness of hunger and satiety cues (69,70), and it has the potential to improve digestive processes through attenuating the stress response (69). While mindful eating has not been extensively studied among patients with GI conditions, the existing literature is promising. A randomized control trial of mindfulness training, including mindful eating, among women with IBS found significant improvements in IBS symptom severity, quality of life, and visceral anxiety at 3-month follow-up (72). Additionally, an online mindfulness intervention for patients with IBD that included mindful eating found several psychological benefits, including improved symptoms of depression, stress, and anxiety (73).

Social domain: nutritional approaches

The recognition of and reliance on natural products, like medicinal plants and herbal products, for prevention of disease and promotion of health has been around for millennia and across cultures, including in traditional Chinese medicine (74) and Ayurveda (75). Traditional Chinese medicine emphasizes herbal formulations in GI disease (76). Ayurvedic practices in India have traditionally used herbal formulations for digestive health (77), and many of these approaches have been passed down from generation to generation. Research on the benefits of Ayurveda herbs and spices is growing, particularly in supporting the microbiome and digestive processes. Triphala is a revered polyherbal preparation that consists of the dried fruit of three plants: *Embllica officinalis* (Amalaki), *Terminalia bellerica* (Bibhitaki), and *Terminalia chebula* (Haritaki). A 2017 review on the benefits of triphala identified several GI benefits, including improved constipation, abdominal pain, and flatulence, as well as benefits to the microbiome (78). However, despite potential value, these practices need further evidence before they can be fully adopted for patients with GI disease. There is not yet specific guidance on how to optimally use many of these formulations in conventional medical practice. Understanding how to use medicinal plants and herbal products differs in the West and East due to generational knowledge and cultural differences (79). Yet, despite differences, food-medicine products are becoming increasingly popular across the globe, and the commonality is that they have additional health benefits beyond normal nutritional functions, which has prompted many to adopt their use (79).

Environmental domain: nutritional approaches

“*Let thy food be thy medicine and medicine be thy food*”, a phrase often credited to Hippocrates, captures the idea of nutrition as foundational for disease management for health in general (80). From a nutritional perspective, an individual’s environment will determine availability to foods that can either promote health or increase risk for the development of disease. There is increasing evidence that the Western diet of processed foods, refined foods, and red meat can increase risk for GI disorders specifically (81,82). If a GI disorder is developed, one’s food environment will directly influence their ability to manage symptoms, prevent worsening of the condition, and influence their quality of life and well-being (83). The relationship between environment, diet, and health outcomes has implications from a therapeutic perspective for patients with GI conditions, including food as medicine.

Food as medicine is a CIH approach that centers on nutrition-based interventions, such as medically tailored meals, medically tailored groceries, and produce prescriptions to prevent and manage chronic health conditions (84). Food as medicine fits well into the whole person health framework as it empowers individuals to pursue health and to be active participants in the management of their condition. The importance of food as medicine is increasingly recognized in the field of gastroenterology with a special issue themed “Food as Medicine” of the *American Journal of Gastroenterology* (85). Dietary interventions, like low FODMAP, gluten-free, lactose-free, and Mediterranean diets are often a first-line approach for GI disorders with varying degrees of benefit (45,86-88). One’s food environment, including access to nutritional options, cultural beliefs and preferences influence a patient’s ability to adhere to and benefit from certain diets, regardless of disease state (45). As research into dietary interventions, including Food as Medicine, grows there is increasing recognition of the necessity of policy to ensure equitable access (89); this is critical for patients with GI disorders given the benefit of the aforementioned dietary approaches.

Mind-body approaches

Mind-body practices span the spectrum between psychological and physical approaches. We highlight several approaches here that may be particularly relevant for patients with GI disorders, including yoga, massage,

acupuncture, tai chi, and light exposure.

Biological domain: mind-body approaches

Mind-body practices can have a profound impact on biological processes among patients with GI disorders. Yoga, is a type of meditative movement that incorporates asanas (physical postures), pranayama (breathwork), and dhyana (meditation). Yoga research among patients with IBS suggests that this mind-body practice may be a beneficial, feasible, and safe treatment approach (90). The exact mechanism by which yoga influences GI health and functioning has not been empirically studied; however, yoga is thought to reduce stress by correcting parasympathetic underactivity (91) and modulating immune responses (92), as well as via psychophysiological mechanisms such as impacting positive affect, self-compassion, and inhibition of the posterior hypothalamus and reduction of salivary cortisol (93). Anecdotally, there have been several yoga poses (based on traditional yoga practices) that have been utilized to improve digestive processes; however, there is not enough evidence to draw firm conclusions on the benefit of these specific movements.

Massage may also be useful in that it increases digestive movement by manipulating soft tissues. There are various forms of massage, some of which promote full body relaxation, and others that have more specific therapeutic targets. Abdominal massage benefits patients with constipation, by stimulating peristalsis, improving bowel function, and reducing discomfort and pain (94). In a recent animal study of IBS-D, abdominal massage was found to improve intestinal transit and reduce visceral hypersensitivity, and decrease mast cell counts, which further elucidates the value of this complementary modality (22). Ultimately, it may be a combination of stimulation, relaxation, and stress reduction that underlies changes associated with massage, but this needs to be empirically studied.

Behavioral domain: mind-body approaches

Acupuncture is a traditional Chinese medicine practice that involves needling, moxibustion, and cupping, all with the goal to restore energy flow (Qi) and the functioning of the organ (95). Acupuncture has been studied in both DGBIs and IBD with promising results including benefits in mood, pain, nausea, vomiting, inflammation, and disease activity (96-98). Research findings suggest that the benefits of acupuncture are derived from its modulation

of the nervous system, including brain regions associated with behavior, attention and pain perception, like the prefrontal cortex, default mode network and homeostatic afferent processing network (99-101). Acupuncture also appears to be beneficial for emotional health. Among patients with mild to moderate active Crohn's Disease (CD), acupuncture has been associated with improved symptoms of anxiety and depression (102). A 2022 meta-analysis of 31 randomized-control trials using acupuncture needling and/or moxibustion among subjects with IBS also found benefits for abdominal pain, symptom severity and quality of life (103). Further, acupuncture may beneficially impact functional brain activity in regions associated with cognition, attention, emotion and pain, for patients with CD (99). Overall, acupuncture may be a good way to enhance adaptive behaviors among GI patients and it is considered generally low risk and well-tolerated. However, more research is needed as there have been conflicting findings, especially in sham control studies, and there is a need for more high quality and randomized control trials.

Social domain: mind-body approaches

Different cultures have developed medical systems and treatment approaches to fit their ethnic norms and communal customs. As aforementioned, traditional Chinese medicine (TCM) is an alternative medicine practice that incorporates psychological, physical, and herbal approaches to restore balance through Qi (energy or life force) (104,105). Interestingly, GI health is a central focus in many of these ancient eastern-based medical systems. Several CIH mind-body approaches that grew from ancient medical systems, have been adopted globally, and are often practiced in social settings. For example, Tai Chi, a Chinese meditative martial art that involves postures and gentle movements alongside breathing, relaxation, and a focused mental state (106) is traditionally performed in a social group setting (107). Similar to yoga, there are tai chi practices that are designed specifically for digestive functioning, but few have been tested in rigorous randomized, controlled trials. There has been one pilot study of virtual tai chi program for patients with IBS-C (constipation-predominate), which utilized GI-specific poses. Researchers found that this group program had positive effects on GI symptoms post-treatment (108). Tai chi may be particularly relevant for older adults with GI disorders, as research has demonstrated that group tai chi interventions may increase social support and have added

health benefits for this age group (109).

Acupuncture, another mind-body modality, has also demonstrated positive effects in GI conditions and can be delivered in a group setting. Research demonstrates that acupuncture may regulate GI motility, the GI barrier, visceral sensitivity, and the brain-gut axis, and have dual regulatory effects by promoting gastric peristalsis in individuals with low gastric motility and suppressing peristalsis in individuals with active initial motility (110,111). Acupuncture can be performed individually or in a communal setting, and there are cited benefits to both (112). Although not yet tested in a GI population, group acupuncture may have therapeutic value for patients with GI disorders, as patients may benefit from shared experiences and social support from others who have similar problems. Group-based acupuncture may also address disparities in access to health care, as it can be delivered at a lower cost and increase our ability to reach patients from a broad socioeconomic background (113).

Environmental domain: mind-body approaches

Light stimulation or light exposure is a CIH mind-body practice with increasing interest, especially as knowledge of the influence of vitamin D and circadian rhythms grows. Interestingly a north-south gradient in the incidence of IBD has been identified in the United States and Europe, with a higher incidence of IBD in the north compared to the south (114-116). Researchers hypothesize that the differences in IBD incidence reflect differences in exposure to ultraviolet (UV) light (114,115), which is a critical element for vitamin D production. Prevalence of CD and disease activity have been inversely associated with vitamin D (117,118). Given the association between UV light exposure and IBD, light exposure and vitamin D have been identified as a possible beneficial CIH therapies. One clinical trial found that oral vitamin D₃ treatment significantly reduced the risk of relapse among 108 patients with CD (118). Further a 2022 animal study found that blue light exposure alleviated colitis and improved inflammation in the colon (119).

Light exposure has also been suggested as a treatment for chronodisruption, which is chronic disruption of the circadian rhythm driven by discordance of light exposure, behaviors and the environment (120). Chronodisruption is associated with altered intestinal permeability and IBD (120,121). Shift work is associated with chronodisruption (120) and increased prevalence and risk of DGBI, GI symptoms, and changes in the microbiome (120,122-125). A small number of studies of

light exposure have demonstrated some benefits including improved task performance, reduced sleep disruption and melatonin shifts among shift workers without GI disease (126,127) but research is limited due to small sample sizes, lack of randomized control trials, and non-GI samples.

Conclusions

The integration of CIH approaches in the treatment of GI disorders is a growing area of interest that holds promise for enhancing patient outcomes. In this narrative review, our aim was to explore the integration of CIH modalities with the whole person health framework. CIH blends conventional and complementary health approaches, prioritizes multimodal interventions (e.g., medication and acupuncture), and emphasizes patient-centered care. Whole person health focuses on promoting health via multimodal interventions across interconnected domains: biological, behavioral, social, and environmental (23). These two concepts are harmonizing, and their integration serves to further support our patients who are already using CIH and whose health reflects interconnected determinants of health. Further, for providers it is imperative to know the evidence of these approaches to promote shared-decision-making and patient-centered care.

While not exhaustive, the studies included in this review demonstrate a range of benefits for the use of CIH approaches in the management of GI disorders. Beneficial evidence for CIH approaches were identified across all domains of the whole person health framework. For example, mindfulness can improve biopsychosocial mechanisms of IBS, acupuncture is associated with decreased GI symptom severity, and nutritional products have the potential to enhance quality of life. Further, patients commonly and increasingly use CIH approaches, which appears to be associated with improved biopsychosocial outcomes, healthier lifestyle (128), and well-being (129).

There are several limitations to the body of research included in this review. These limitations include lack of randomized control trials, scarcity of standardized outcomes measures, shortage of diverse and GI-specific samples, and limited generalizability. As such the data can vary and results can be contradictory. The literature on CIH approaches, particularly in chronic GI conditions, is in its infancy. More research needs to be conducted to fully understand the impact of CIH approaches on GI outcomes. Additionally, this narrative review focuses on CIH approaches deemed relevant to chronic GI conditions from a whole person

framework, limiting the scope of the review. Further, while most approaches appear to be well-tolerated, it is imperative to understand the safety and efficacy of these treatments, especially since their production may not be regulated. More longitudinal research and randomized control trials are needed to understand the mechanisms of action, long-term impacts of CIH use, and how to best personalize treatment recommendations.

Ultimately, there is a growing call to change our approach to healthcare to one that appreciates the whole person and their sociocontextual determinants of health. This paper serves to enhance understanding of CIH approaches and their integration into our care model for GI patients to improve clinical decision-making as we work towards holistic healing.

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Footnote

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