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INVITED COMMENTARY

Take a Deep Breath and Keep Your Video On: Can Virtual Yoga Help IBS?

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Irritable bowel syndrome (IBS), a globally prevalent gastrointestinal disorder, is characterized by chronic abdominal pain associated with a change in bowel habits or stool consistency [1]. One of the major challenges in effectively treating IBS is the heterogeneity of pathophysiology that contributes to this disorder, with the emergence of a variety of therapies whose success is at best mixed. As a result, up to 50% of IBS patients seek non-pharmacological (alternative) treatments, described as therapies not conventionally included in the traditional curricula of Western medical schools [2]. These therapies are popular among patients since they promote "wellness," are often "natural," purporting to holistically treat the cause rather than the symptoms [2]. A subset of these alternative therapies includes mind–body medicine, examples of which include psychological therapies such as cognitive behavioral therapy (CBT), chiropractic medicine, and yoga.

Yoga is a popular activity in the Western world, originating from an ancient practice rooted in East Indian philosophy that seeks to unite the mind, body, and spirit using stretching poses (asana), breathing exercises (pranayama), and meditation (dhyana). In 2016, a systematic review [3] examined the efficacy of yoga for IBS, in of which six randomized controlled trials (RCT) studying an aggregate of 273 patients concluded that yoga is safe and efficacious in reducing bowel symptoms/severity and improving quality of life when compared with conventional treatments.

In this issue of *Digestive Diseases and Sciences* [4], D'Silva et al. performed further analysis of participants enrolled in a previously published study [5]. In this study, they initially recruited 79 patients with IBS diagnosed via Rome 4 criteria [1], of mild severity as defined by the irritable bowel severity scoring system, who were stable on medications. A total of 38 patients were randomized to virtual yoga and 41 patients to placebo. In this virtual yoga program, participants were taught neck and arm movements, breathing practices, and meditation in online sessions delivered weekly via Teams for eight weeks. Each session lasted about an hour and were held in class sizes of < ten participants, with follow-up home practices required.

The authors had previously shown [5] a nonsignificant 37% improvement in IBS symptom severity in the virtual yoga group compared with 20% in the placebo group, although significant improvements were noted in the virtual yoga group for quality of life, fatigue, and perceived stress. In the current study, the authors [4] recruited the 27 participants within the virtual yoga group who did not withdraw from the study, of whom 14 (52%) agreed to participate in interviews. These 14 participants were all female, with 93% at least with an undergraduate education and 86% trying yoga previously with a positive experience. Therefore, it was not surprising that the participants reported positive physical and mental outcomes after the intervention since these participants already believed in the benefit of yoga and were likely motivated to participate. Nevertheless, understanding the "why" of improvement is important, especially considering that despite the modest nonsignificant symptom improvement, the patients still reported an improved quality of life, providing impetus to further study this intervention. Therefore, the choice by the authors for a qualitative approach to the participants' experiences is important and necessary to better understand which parts of the program could be beneficial, with implications for practitioners who intend to design similar programs in the future.

The results showed that participants in the study reported increased awareness of their body, enabling improved symptom management [4]. They felt that yoga was a "tool in their toolbox" to aid them in coping. Furthermore, the

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improvements in other aspects of their lifestyle, such as sleep, physical activity, and stress management likely explained the perception of improved well-being. In particular, the breathing exercises and increased self-awareness were considered useful [4].

Yoga is hypothesized to help IBS by improvements in the biological, psychological, and social domains. For example, the "pranayama" aspect of yoga focuses on breath watching and breathing techniques that may increase parasympathetic activity that in turn may improve the altered stress response via the hypothalamic-pituitary axis or even reduce pro-inflammatory cytokine production [6]. Nonetheless, this benefit may even be independent of these mechanisms, affecting visceral hypersensitivity by other mechanisms such as distraction [7]. The meditation (dhayana) aspects of yoga also promote self-awareness, enabling participants to focus on their bodily sensations and improve coping mechanisms along with fostering acceptance of their condition, similar to features of other brain–gut behavioral therapies such as mindfulness and acceptance and commitment therapies [8]. Further studies of the "asana" aspects of yoga are warranted, since stretching exercises, especially those which involved changing the shape and compliance of the abdominal cavity, could in theory help pelvic floor problems and abdominophrenic dyssynergia, all common contributors to symptoms in IBS.

Yet, despite the promising results, yoga along with many other mind/body interventions are often limited by the availability of trained practitioners. This is perhaps the most interesting study aspect, in that it further elucidates what the components of a successful digital behavioral therapeutics approach may look like. Studies on internet CBT have shown efficacy in terms of symptom improvement along with high adherence [9] reflected in the virtual mode of delivery in this study that provided convenience due to the asynchronous nature of the program, enabling the participants to structure the program around their own schedules. Features such as reminders and homework also helped promote consistency and accountability, both important factors in a successful mind/body intervention [8]. Other favored factors included the flexibility in the program to tailor the treatment based on the subjects' individual needs along with autonomy to choose what they wanted to do and to select the appropriate level of intensity. The social support provided by the community of participants also was beneficial to their overall well-being. Another recurrent theme was that the participants' initial negative perception of the intervention changed as the program progressed, with consequent increasing adherence and participation, suggesting that engaging the participants aggressively at the start could be a useful strategy for assuring adherence. A summary of these favorable factors can be found in Table 1.

Table 1 Components of a successful digital behavioral therapeutic program

Content
Evidence-based pathophysiological mechanisms
Easy to digest content
Mode of delivery
Asynchronous resources available (e.g., videos)
Tailored to individualized needs
Autonomy to choose specific components or intensity (e.g., breathing exercises, stretching exercises, meditation, etc.)
Homework to practice learnt concept
Reminders to promote accountability
Hooking participants early with strong engagement from program
Social support with other participants
Hybrid options to meet practitioners

There is a reasonable body of evidence supporting the mechanism of action and efficacy of yoga in the treatment of IBS. Virtual yoga or other web-based behavioral therapeutics appear efficacious as an alternative to in-person classes, with the potential to improving commitment and adherence, although it also likely has deficiencies when compared with face-to-face approaches. Therefore, rather than thinking about both exclusively, it would be good to marry the best of both worlds, using positive enablers of each combined into a hybrid format that incidentally was requested by the study participants [4].

Integration of these therapeutic approaches into existing electronic health records would also be useful to help practitioners consider their use for other diseases such as improving cardiovascular risk factors in ischemic heart disease. The recent avalanche of artificial intelligence capabilities is also likely able to facilitate individualized treatment options, adjusted based on evolving needs. Overall, this is a promising step forward in understanding not only the "what" that works, but also "how" we actually deliver them effectively.

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Declarations

Conflict of interest None of the authors have any conflict of interests related to this study.

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