

# Mindfulness-based interventions to address psychological distress during COVID-19: applications and opportunities

## Abstract

The COVID-19 pandemic and its associated stressors (e.g., job loss, physical distancing, loss of a loved one, physical illness) have resulted in widespread, ongoing social disruption and related psychological distress for many across the globe. Mindfulness-based Interventions (MBIs), which are programs designed to help strengthen one's awareness of physical and mental experiences in the present moment without judgment, have demonstrated effectiveness in reducing such psychological difficulties. As such, they may be a low-cost and accessible resource for addressing pandemic-related psychological maladies. Moreover, they can be administered via telehealth modalities including smartphone apps and websites. These tools may help increase accessibility of mental health care while supporting physical distancing recommendations. We reviewed studies evaluating the effectiveness of MBIs for reducing psychological symptoms after prior community disasters including typhoons, tsunamis, and hurricanes. That research demonstrates that MBIs may help alleviate anxiety, post-traumatic stress (PTS) symptoms, and depression in the wake of such events. However, most of these studies had very small sample sizes and other methodological limitations. More generally, participation in telehealth-delivered MBIs has been associated with decreases in stress, depression, and anxiety symptoms. Importantly, MBIs administered online demonstrate comparable effectiveness to traditional in-person MBIs. Future research on MBIs for community disaster survivors should utilize larger sample sizes and include longer-term follow-up assessments to evaluate the sustained impacts of MBIs for addressing psychological disturbances. This knowledge may help provide accessible and effective coping tools as we recover from the COVID-19 pandemic and prepare for future community disasters and public health crises.

**Keywords:** COVID-19, mindfulness, intervention, disaster, psychological distress

**Abbreviations:** MBI, mindfulness-based interventions; PTS, post-traumatic stress; MBSR, mindfulness-based stress reduction; MBCT, mindfulness-based cognitive therapy; RCT, randomized controlled trial

## Introduction

The COVID-19 pandemic and its associated stressors have resulted in widespread, ongoing social disruption for many across the globe. With this collective trauma as a backdrop, many countries have experienced unprecedented social turmoil, including a racial justice reckoning that has led to widespread social unrest, record job losses, and climate-related weather disasters. This cascade of events has led to a compounding crisis with significant implications for psychological adjustment and wellbeing throughout the populace.<sup>1</sup> Indeed, research using a nationally representative sample of U.S. residents (N=6,514) demonstrated a robust relationship between both direct (e.g., getting sick with COVID-19, losing one's job) and indirect (e.g., media-based) COVID-19 exposures and psychological distress.<sup>2</sup> Similarly, data from U.S. Census Bureau-administered surveys to a series of distinct nationally representative samples demonstrating an increase in anxiety and depression from 2019 to 2020.<sup>3</sup> Such increases will likely have implications for mental as well as physical health over time, as such increases in event-related distress likely portend downstream deleterious effects on physical health.<sup>4</sup>

## Mindfulness-based interventions during COVID-19

Mindfulness-based interventions (MBIs) offer a potential low-cost solution to address current and future public health maladies. Such

interventions can be administered widely throughout the population in both group and individual settings, and both in person and online. Applications for the online use of MBIs may be particularly beneficial during pandemics as they can promote resilience while facilitating an adherence to physical distancing guidelines and increasing accessibility for typically hard to reach populations (e.g., rural communities). Herein, we present evidence where mindfulness-based interventions have helped ease psychological symptoms in the wake of previous community disasters and review research demonstrating the psychological benefits of participation in MBIs. Finally, we discuss the efficacy of mindfulness trainings delivered online, which may be particularly useful in alleviating psychological distress and related maladies during and in the recovery period of COVID-19.

Providing resources to address post-event mental health at the population-level has proven challenging, given the difficulty in identifying those in need and administering cost-effective, evidence-based interventions.<sup>5</sup> This may be particularly problematic during COVID-19, in light of the widespread restrictions and recommendations related to physical distancing guidelines aimed to slow the spread of the virus.<sup>6</sup> During the COVID-19 pandemic and following inevitable future crises, MBIs may help provide accessible and effective coping strategies to distressed communities.

MBIs are programs designed to strengthen one's ability to be nonjudgmentally aware of one's physical and mental experiences in the present moment, and can include activities such as meditation, body scans (i.e., directing attention to specific parts of the body, often in a sequential order), breathing exercises, and yoga.<sup>7</sup> Commonly

utilized MBIs include Mindfulness-Based Stress Reduction (MBSR)<sup>8</sup> and Mindfulness-Based Cognitive Therapy (MBCT),<sup>9</sup> which are traditionally 8- to 10-week programs. These group-based guided programs combine mindfulness training techniques with stress reduction and cognitive reappraisal strategies, respectively.<sup>9</sup> Both MBSR and MBCT have demonstrated effectiveness in reducing psychological distress such as perceived stress, anxiety, and depression<sup>11</sup> and physical health outcomes related to chronic pain, clinical colds, psoriasis, irritable bowel syndrome, and HIV.<sup>12</sup> Moreover, MBIs can be implemented widely, as they are effective both in-person and via telehealth modalities.<sup>13-15</sup> Internet-based and app-based MBIs, which may range from 8-week guided interventions closely following MBSR guidelines to 2-week informally structured self-guided programs, and have also produced beneficial effects on stress, depression, anxiety, and wellbeing.<sup>7</sup> These practices may help fill the need for cost-effective interventions that can be used to address a range of psychological issues occurring post-disaster.

### Mindfulness practices and collective trauma

Prior research on collective trauma has shown that mindfulness practices may be effective in reducing mental health symptoms after widespread traumatic events. Following Typhoon Haiyan, a sample of counselors and psychologists (N=68) displayed a reduction in depression symptoms after participating in an 8-week at-home mindfulness-based program that involved guided mindful awareness of breath and breath-focused imagery and mantras.<sup>16</sup> In a discrete sample of government workers following Typhoon Haiyan (N=98), mindfulness trainings including “letting go” breathing exercises, in which one visualizes breath exhalations dissolving any tension in the body and mind, helped improve post-event coping skills and self-efficacy.<sup>17</sup> Survivors (N=166) of compound traumas (war and a tsunami), who were treated with six sessions of meditation and relaxation exercises, demonstrated a significant reduction in post-traumatic stress (PTS) symptoms.<sup>18</sup> Following Hurricane Katrina, significant decreases in anxiety were also evident following a 3-session MBI<sup>19</sup> and a guided meditation workshop with an 8-week at-home study program.<sup>10</sup> Although these studies provide encouraging evidence regarding the utility of implementing MBIs following disaster, the latter two studies consisted of 14 and 15 participants, respectively, highlighting the need for future research with larger sample sizes.

The practice of yoga may also aid in alleviating anxiety, depression, and PTS symptoms post-disaster. For example, in a small sample (N=22) of survivors of the Bihar flood, participation in a yoga-based intervention consisting of physical postures, guided meditations, and relaxation exercises reduced anxiety and sadness.<sup>20</sup> Following the 2004 South-East Asia tsunami, participation in a yoga-based intervention alone and when combined with exposure therapy reduced symptoms of depression and PTS in a sample reporting high initial PTS (N=183).<sup>21</sup>

Early studies conducted during the COVID-19 pandemic have shown that MBIs may be effective in reducing pandemic-related psychological distress. During Italy’s initial COVID-19 lockdown, teachers (N=66) who completed an 8-week Mindfulness-Oriented Meditation course consisting of guided and individual meditation practices including breathing awareness, body scan, and focusing attention to the mind and body, demonstrated a reduction in anxiety and depression symptoms and an increase in psychological wellbeing.<sup>22</sup> Importantly, this was evidenced in teachers demonstrating both high and low resilience levels prior to participating in the study. In Wuhan, China, participants randomly assigned to a daily mindfulness practice

for 10 days reported reduced anxiety and improved sleep compared to participants in a control condition (total N=97).<sup>23</sup> Other authors have noted the likely benefit of MBIs to address pandemic-related issues,<sup>24,25</sup> and a number of promising protocols have been published.<sup>26-28</sup> Yet at present, more research is needed with larger samples and longer-term follow-up assessments to examine whether effects are sustained.

### Administering mindfulness-based treatments via telehealth

Given the increased risks of COVID-19 resulting from in-person interactions,<sup>29</sup> telehealth, or the administration of healthcare through modes of telecommunication such as websites and smartphone apps, may help ensure the wide availability of mental health resources despite these restrictions on movement and interactions.<sup>30,31</sup> Indeed, a growing body of research has demonstrated the effectiveness of telemental health care in addressing depression, anxiety, and PTS symptoms.<sup>32</sup> Such approaches may help extend MBIs to individuals adhering to physical distancing guidelines, as well as populations who generally experience disparities in the provision of mental health services.<sup>4,33</sup> MBIs may also be applicable following future disasters in which infrastructure and other services may be disrupted.

Although MBIs have historically been administered primarily in face-to-face settings, MBIs delivered online may be similarly effective in alleviating psychological distress. Several studies measuring the effectiveness of simplified versions of MBSR modified for online delivery have demonstrated comparable effectiveness to traditional in-person offerings.<sup>14,15</sup> In a meta-analysis of randomized controlled trials (RCTs) of eight online mindfulness interventions, seven of which used simplified MBSR protocols, Jayewardene et al.<sup>14</sup> determined that mindfulness training administered online showed substantial perceived stress reduction effects for non-clinical populations, which were found to be similar to effects demonstrated for in-person MBSR. Spijker et al.<sup>15</sup> also conducted a meta-analysis of 15 RCTs utilizing MBIs including MBSR and MBCT, which were delivered through the Internet, computer application, or virtual classroom. The review indicated that online MBIs exhibited small to medium effects on mental health, comparable to effect sizes observed in traditional face-to-face MBSR and MBCT interventions.<sup>15</sup> An RCT (N=131) of Internet-based Stress Management programs (ISMs), which are self-directed 8-week mindfulness-based courses that include guided meditations and breath awareness, significantly reduced perceived stress and improved mindfulness.<sup>34</sup> Lastly, a small sample (N=20) of participants in an online group-based MBI reported an enhanced sense of community and group support in addition to reductions in depression and anxiety symptoms;<sup>35</sup> this support may be particularly beneficial during times of community crises.

The widespread use of mobile phones, particularly smartphones, allows for mindfulness-based telehealth interventions to be made broadly available to general populations.<sup>30</sup> Indeed, cellphone and smartphone ownership have continued to rise over the past several years, with 96% of Americans owning some type of cellphone and 81% owning a smartphone as of 2019.<sup>36</sup> RCTs of mindfulness-based mobile apps such as Headspace, Calm, and DeStressify have been shown to significantly decrease perceived stress, anxiety, and depression, and to improve emotion regulation, life satisfaction, and resilience.<sup>37-40</sup> Beneficial effects have been evident even for relatively brief interventions. For example, studies testing the efficacy of Headspace, one of the most popular and widely available mindfulness meditation apps, demonstrated that 10 minutes of beginner’s meditation per day over a 10-day period led to significant improvements in depression symptoms and an increase in positive affect.<sup>41</sup> Due to their portable

and convenient nature, mental health apps may also help those juggling telework with personal and home responsibilities while coping with pandemic-related stress.<sup>42</sup> As companies shift towards more remote work environments moving forward, these applications may become increasingly useful for practicing mindfulness in the work-home environment.

Online MBIs are typically lower cost compared to traditional in-person mental health services, which widens the reach of telemental health accessibility to include lower-income populations who may not be able to afford the sometimes prohibitive costs of psychotherapy or other in-person interventions.<sup>43</sup> In addition, reduced travel-related barriers and increased flexibility around time constraints (e.g., 24/7 availability, self-paced practices, no long waiting lists) also suggest that MBIs delivered online may be easier to access than face-to-face programs.<sup>15,43</sup> With digital accessibility and Internet use becoming increasingly common,<sup>44</sup> Internet-based and smartphone app-based MBIs may be particularly well-suited for supporting psychological functioning across the populace.<sup>45,46</sup>

## Conclusion

While the COVID-19 pandemic has resulted in increased psychological distress in the form of acute stress, depression, anxiety, PTS symptoms, and other maladies, preliminary evidence suggests that MBIs may be effective in addressing some of these mental health issues. Importantly, MBIs delivered via telehealth modalities may increase availability to those who might not typically be able to access services both during the COVID-19 pandemic and beyond. Researchers and clinicians should capitalize on this opportunity to research and evaluate the efficacy of MBIs to address mental health ailments and reduce health disparities during times of crises. Rigorously designed RCTs with larger sample sizes may be especially applicable for improving extant knowledge. Such information may be useful as society seeks to cope with and heal from the COVID-19 pandemic and may provide support through future community disasters and public health crises.

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## Conflicts of interest

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