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National Internet-Based Survey of the Use, Barriers, Reasons and Beliefs of Mind-Body Practices During the Early Months of the COVID-19 Pandemic

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Abstract

The purpose of this study was to learn about the use, barriers, reasons and beliefs regarding mind-body practices among adults living in the United States during the beginning months of the 2019 novel coronavirus disease (COVID-19) pandemic. An on-line survey was developed following the Checklist for Reporting Results of Internet e-Surveys (CHERRIES) guidelines and using the online survey software program, Qualtrics®XM, platform. Pilot testing of the survey was conducted for usability and functionality. The final 24-item survey was distributed via email and social media. A total of 338 adults responded to the survey, with 68.8% indicating that they participated in mind-body activities since the start of the pandemic. Physical activity was the most frequently (61.5%, n = 227) used mind-body practice. Further, 2 of the common barriers to engaging in mind-body practices were lack of motivation and wandering mind. Frequently listed reasons for using mind-body practices were to promote health, reduce stress and relaxation. Respondents believed that mind-body practices resulted in less stress. These findings may be applicable for reducing psychological stress related to the pandemic, as the pandemic continues to impact many areas of the United States.

Keywords

mind-body practices, stress, self-care, mind-body health

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Introduction

The beginning months of the year 2020 have been repeatedly referred to as unprecedented times as individuals, families, communities, healthcare systems, businesses, governments and organizations were faced with responding to the threat of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) that causes the 2019 novel coronavirus disease (COVID-19). The first case of COVID-19 was reported in the United States of America (United States) on January 20, 2020 in the state of Washington,[1] and on March 11, 2020, the World Health Organization[2] labeled COVID-19 as a worldwide pandemic in response to the very high infection rate and rapid spread of the disease.[3] By mid-March, directives were issued across the United States to close non-essential businesses and schools, and for individuals to shelter-in-place,[4] causing considerable stress and significant disruptions to many aspects of life. With the social isolation and economic hardships related to the spread of COVID-19, as well as shelter-in-place orders, fear of COVID-19,[5] coping with having COVID-19 and/or witnessing loved ones suffer from the disease[6] rates of mental health suffering and psychosocial difficulties also began to rise.[7,8] While stress and psychological concerns might be considered normal[9] during an infectious disease outbreak, the long-term consequences may compound overall health and well-being.

The use of mind-body practices, such as meditation and Yoga, have been shown to improve mental health[10-14] and reduce stress[15-18] in a variety of populations and circumstances. Further, there is evidence that Yoga is useful following a natural disaster, with respect to coping with psychological stressors related to the disaster.[19] Worth noting is that during times

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where physical health is threatened, engagement in mind-body practices has also resulted in improvements in physiological health, albeit, these improvements appear to depend on consistency in practice.[20,21] To the best of our knowledge, there are no published reports on the use of mind-body practices during a pandemic.

Given the impact that the COVID-19 pandemic is having on psychosocial, mental and physical health, the aim of this study was to learn about the use of mind-body practices during the early months of the pandemic. Barriers to participating in mind-body practices, reasons for engaging in mind-body practices, and beliefs about mind-body practices were also assessed in this study. Evaluating these domains will serve as a guide for both clinical practice and future research while experiencing a pandemic.

Methods

Study Design

A cross-sectional, descriptive survey design was used. An Internet-based anonymous open survey was developed using Qualtrics®XM, an online survey software, to assess participation, barriers and beliefs regarding mind-body practices during the early months of the COVID-19 pandemic.

Ethical Approval

The institutional review board of a university in the northwestern United States approved this study (approval number TH042420-EX). Participants were informed that participation was voluntary, and that they could choose not to answer any survey items. Participants gave consent to taking part in the study by entering the survey. An informed consent statement that detailed this consent to participate was posted as an introduction and prior to entering the survey.

Participants and Recruitment

The target population for this study was adults impacted by the COVID-19 pandemic lockdown and shelter in place orders that occurred across the United States between April – June 2020. Study recruitment was conducted via email distribution and social media advertisements from the beginning of May to mid-June 2020, when states began to loosen shelter in place orders. Social media advertising consisted of: "How are you coping? Tell us in this brief survey on the use of mind-body practices during COVID-19." No incentive was provided for survey completion.

Survey Development

Survey items specific to the utilization of and barriers to the use of mind-body practices during the initial months of the COVID-19 pandemic were predominantly drawn from questions used in a national survey[22] of Yoga practitioners on practice patterns and perceptions of the influence of Yoga on health. Adaptive questioning was used in an attempt to reduce the number of questions, and thereby, reduce respondent fatigue.[23] The survey was developed in the English language and followed the Checklist for Reporting Results of Internet e-Surveys (CHERRIES) guidelines.[23]

Pilot test. A target of n = 13 completed responses, recruited by email distribution, was used to pilot test the usability and functionality of the survey. The purpose of pilot testing was to evaluate comprehension of questions and response items, assess clarity of questions with incomplete responses, and to gauge the amount of time needed to complete the survey. Pilot test participants were encouraged to provide comments regarding survey items, including usability of the survey on both mobile and Web applications. Participant responses from the pilot sample were not included in analysis.

Questionnaire refinement. Using feedback from the participants who completed pilot testing of the survey, several questions were refined, and the order that questions appeared was revised. Further, Qualtrics formatting was adjusted to improve the user experience using a mobile device. The revised survey was examined by the research team to ensure readability and face validity prior to survey distribution. The final survey consisted of 24 questions.

Survey items. Demographic items consisted of age, gender identification, race/ethnicity, relationship status, level of education, employment status, current occupation, and geographic region. States were categorized into the regions Northwest, Midwest, South and West based on region characterization used in the National Health Interview Survey conducted by the National Center for Health Statistics.[24] Physical activity prior to and during the COVID-19 pandemic, as well as current physical health and mental health were rated using Likert-type items. Individual survey items were used to assess mind-body practices since the start of the COVID-19 crisis (January 1, 2020) to the time of survey completion. Mind-body practices were defined as activities that are done to help the mind have a positive impact on the body.[25] The survey items were a mix of yes/no questions, multiple choice, and 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree) options. These items included if mind-body practices were used (yes/no), and if no, respondents were asked to identify barriers to using mind-body practices. If a respondent selected "yes" to using mind-body practices, they were asked about: type of mind-body practices used (e.g., acupressure, acupuncture, art therapy, breathing techniques, color therapy, dance movement therapy, energy therapy, guided imagery, healing touch, hypnosis, massage therapy, meditation, movement therapy, music therapy, Pilates, prayer, Qigong, relaxation techniques, spinal manipulation, spiritual healing, Tai-chi, Yoga, form of physical activity and other), most frequently utilized mind-body practice, frequency of mind-body practices, length of mind-body practice engagement, changes in mind-body practices since the start of the pandemic, reasons for engaging in mind-body practices, barriers to utilizing mind-body practices, and beliefs regarding mind-body practices during the COVID-19 pandemic.

Analysis

Data were exported from Qualtrics®XM to the statistical package SPSS® by IBM® version 26. Data clean-up involved identifying miscoded data, missing data and outliers, as well as removing survey responses from respondents who reported living outside of the United States. Data were used from both completed and early terminated surveys for analysis. Descriptive statistics, including measures of central tendency, standard deviations, frequency counts and percentages were used to describe participant demographics, physical activity, as well as health characteristics. Frequency counts and percentages were used to describe type of mind-body practices used, most commonly

Table 1. Participant Characteristics.

Variable	Mean (SD)
Age (n = 336)	49.7 (16.1) years
Gender identification (n = 334)	Frequency (%)
Male	29 (8.6)
Female	304 (89.9)
Race (n = 335)	
White	311 (92.0)
Black or African American	4 (1.2)
American Indian or Alaska Native	1 (0.3)
Asian	9 (2.7)
Native Hawaiian or Pacific Islander	2 (0.6)
Other	5 (1.5)
More Than One Race	3 (0.9)
Ethnicity (n = 334)	
Not Spanish, Hispanic, or Latino	322 (95.3)
Spanish	4 (1.2)
Hispanic	6 (1.8)
Latino	2 (0.6)
Relationship status (n = 333)	
Single	39 (11.5)
In a relationship not married	43 (12.7)
Married	210 (62.1)
Widowed	12 (3.6)
Divorced	28 (8.3)
Other	1 (0.3)
Education (n = 332)	
< high school degree	1 (0.3)
High school graduate or GED	13 (3.8)
Some college no degree	34 (10.1)
Associate degree	25 (7.4)
Bachelor's degree	79 (23.4)
Master's degree	106 (31.4)
Practice doctorate	14 (4.1)
Doctoral degree	50 (14.8)
Professional degree (JD, MD)	10 (3.0)
Employment status (n = 332)	
Employed full-time	163 (48.2)
Employed part-time	50 (14.8)
Unemployed and looking for work	5 (1.5)
Unemployed and not looking for work	9 (2.7)
Student	21 (6.2)
Retired	55 (16.3)
Homemaker	10 (3.0)
Self-employed	13 (3.8)
Unable to work, disabled	6 (1.8)
Unemployment due to COVID (n = 14)	
Yes	10 (3.0)
No	4 (1.2)
Occupation (n = 332)	
Healthcare worker	99 (29.3)
Essential worker	52 (15.4)
None of these	181 (53.6)
Type of essential worker (n = 51)	
Food and agriculture	10 (3.0)
Public works and infrastructure services	2 (0.6)
Critical manufacturing	1 (0.3)
Education	13 (3.8)
Other	25 (7.4)
Region in America (n = 321)	
West	198 (58.6)
South	53 (15.7)
Midwest	61 (18.0)
Northeast	9 (2.7)

Abbreviation: SD, Standard deviation.

utilized mind-body practice, consistency of mind-body practices, length of mind-body practice engagement, reasons for engaging in mind-body practices, barriers to utilizing mind-body practices, and beliefs regarding mind-body practices.

Chi-square tests of association were used to evaluate the association between region and if mind-body practices were used, general physical health and changes in mind-body practices since the start of the COVID-19 crisis, and general mental health, changes in mind-body practices since the start of the COVID-19 crisis and type of mind-body practice and barriers to engaging in mind-body activities. For the latter test of association, type of mind-body practice was categorized as practitioner or face-to-face mandatory and self-administered or easily available online. Some of the barriers were not included in the analysis due to lack of relevance (e.g., lack of transportation is not relevant as a barrier for self-administered or online mind-body practices). The assumptions of a chi-square test of association were examined for each individual test, and if the more than 20% of cells were less than 5 and the assumption was violated, variable categories were combined.[26] This resulted in the region variable being categorized as "West versus other regions" and the general physical health and general mental health variables being categorized as "more than good," "good," and "less than good." Furthermore, the barrier variables were recoded as "disagree, "neither disagree or agree" and "agree." Statistical significance was set at 0.05, and all statistical tests were 2-sided.

Results

Demographics

A total of n = 341 participants started the survey, though 3 respondents were removed from the dataset for living outside of the United States, resulting in a sample size of n = 338, as both complete and incomplete survey data were analyzed. A total of n = 300 (88.0%) persons completed all survey items. Participant characteristics are displayed in Table 1. Participants predominantly identified as being female (89.9%, n = 304), white (92.1%, n = 311) and non-Hispanic (95.3%, n = 322). Twenty-nine percent (n = 99) reported working in the healthcare field, and 15.4% (n = 52) indicated that they were essential workers. There were more respondents from the West region of the United States (58.6%; n = 198) than any other region (South: n = 53; Midwest: n = 61; Northeast: n = 9).

Physical Activity and Health Variables

Physical activity prior to and during the early months of the COVID-19 pandemic, in addition to health variables are reported in Table 2. Over half of the sample (55.0%, n = 186)

Table 2. Physical Activity and Health Variables.

Variable	Frequency (%)
Physical activity level prior to the COVID-19 pandemic (n = 323)	
Low	57 (16.9)
Moderate	186 (55.0)
High	80 (23.7)
Physical activity level at the time of survey completion (n = 322)	
Low	122 (36.1)
Moderate	138 (40.8)
High	62 (18.3)
General physical health (n = 323)	
Poor	1 (0.3)
Fair	30 (8.9)
Good	114 (33.7)
Very Good	133 (39.3)
Excellent	45 (13.3)
General mental health (n = 321)	
Poor	4 (1.2)
Fair	47 (13.9)
Good	119 (35.2)
Very Good	107 (31.7)
Excellent	44 (13.0)

reported that their normal physical activity prior to the start of the pandemic was at a moderate level, whereas n = 57 (16.9%) reported their physical activity level as low and n = 80 (23.7%) reported their physical activity level as high. Current physical activity levels at the time of completing the survey were reported as low (36.1%, n = 122), moderate (40.8%, n = 138) and high (18.3%, n = 62). In general, the majority of respondents rated their physical health as either "good" or "very good" (73.0%, n = 247). Similarly, general mental health was primarily reported as "good" or "very good" (66.9%, n = 226).

Participation in Mind-Body Practices

Mind-body participation and types of mind body-practices are reported in Table 3. The majority of respondents indicated that they participated in mind-body practices since the start of the COVID-19 crisis, n = 234 (68.8%). Physical activity was listed as the most utilized type of mind-body activity respondents engaged in, n = 227 (61.5%), with hiking/walking (39.1%, n = 132) being the most frequent activity. If participants engaged in more than one mind-body practice, they were asked to identify which practice they utilized most frequently. Results from this survey item indicate prayer (8.3%, n = 28) and walking/hiking (8.3%, n = 28) were used the most often.

Table 4 displays mind-body practice characteristics with respect to frequency of participation, duration of mind-body activities, and changes in mind-body practices since the start of the COVID-19 pandemic. The most common reported frequency was 4-5 times per week (23.7%, n = 80) and the most frequent duration was up to 60 minutes of mind-body practice (25.4%, n = 86). The majority of the respondents (43.2%, n = 146) indicated that they increased mind-body practice engagement since the start of the pandemic.

Barriers to Mind-Body Practices

Respondents who indicated that they *did not* engage in mind-body activities (i.e., non-mind-body practice users; 17.9%, n = 61), were asked about barriers to participating in such practices. The barriers that were identified as "strongly agree" or "agree" the most often were: 1) lack of motivation (11.1%, n = 38), 2) wandering of mind (9.2%, n = 31); and 3) irregularity in schedule (8.9%, n = 30). The barriers most commonly noted as "strongly agree" or "agree" for respondents who reported that *they did engage* in mind-body activities included: 1) wandering of mind (37.9%, n = 128); 2) lack of motivation (37.3%, n = 126); and 3) low mood (36.7%, n = 124). A complete list of barriers by mind-body use status are presented in Table 5 and 6.

Reasons for Engaging in Mind-Body Practices

Reasons for engaging in mind-body practices are outlined in Table 7. The top 3 "agreed" or "strongly agreed" reasons included: to promote health (66%, n = 223), reduce stress (68.4%, n = 231), and relaxation (61.3%, n = 207).

Beliefs About Mind-Body Practices

Table 8 contains a complete list of beliefs about mind-body practices. The 3 most common beliefs that were reported as "agree" or "strongly agree" consisted of feeling less stressed, n = 208 (61.5%), feeling happier, n = 205 (60.7%), and having a healthier mind, n = 199 (58.9%).

Associations

A Pearson's chi-square was carried out to examine if region and the use of mind-body practices were related. There was significant evidence of an association between living in the west versus other regions of the United States ($\chi^2_{2,319} = 6.555$, $p = .038$, $\phi_c = .143$). There was no evidence of a significant association between general physical health and changes in the use of mind-body practice (increase, decrease or no change), and similarly, there was no association found between general mental health and changes in the use of mind-body practices.

Missing Data

With respect to missing data, for demographic variables, less then 2% of the data were missing. Further, for physical activity and health variables, less then 5% of the data were missing. Finally, the survey item with 23 separate mind-body practices that included yes/no responses for each practice, and follow-up question that consisted of identifying which one of the 23 mind-body practices was utilized most often, the missing data rate averaged 40.8%. This was potentially due to confusion

Table 3. Types of Mind-Body Practices Engaged in During the Early Months of the COVID-19 Pandemic.

Variable	Frequency (%)
Participation in mind-body practice (n = 325)	
Yes	234 (68.6)
No	61 (17.9)
I don't know	30 (8.8)
Type of mind-body practice	
Acupressure (n = 194)	9 (2.6)
Acupuncture (n = 192)	9 (2.6)
Art therapy (n = 198)	61 (17.9)
Breathing techniques (n = 229)	176 (51.6)
Color therapy (n = 197)	36 (10.6)
[a]Dance movement therapy (n = 192)	17 (5.0)
Energy therapy (n = 193)	12 (3.5)
Guided imagery (n = 197)	50 (14.7)
Healing touch (n = 190)	13 (3.8)
Hypnosis (n = 191)	9 (2.6)
Massage therapy (n = 196)	37 (10.9)
Meditation (n = 221)	140 (41.1)
[a]Movement therapy (n = 188)	6 (1.8)
Music therapy (n = 196)	47 (13.8)
Pilates (n = 192)	28 (8.2)
[b]Prayer (n = 206)	127 (37.2)
Qigong (n = 186)	10 (2.9)
Relaxation techniques (n = 213)	136 (39.9)
Spinal manipulation (n = 186)	17 (5.0)
Spiritual healing (n = 187)	27 (7.9)
Tai-chi (n = 191)	17 (5.0)
Yoga (n = 224)	
Form of physical activity (n = 227)	227 (61.5)
[c]OULA (n = 208)	21 (6.2)
Running (n = 208)	41 (12.1)
[b]Hiking/walking (n = 207)	132 (39.1)
Biking (n = 208)	31 (9.2)
Gardening/yard work (n = 207)	10 (3.0)
Barre (n = 208)	4 (1.2)
Strength training/high intensity interval training (n = 208)	24 (7.1)
Stretching (n = 208)	5 (1.5)
Video workout (n = 208)	7 (2.1)
Other (n = 174)	54 (16.0)

[a]With a certified therapist.
[b]Identified as most frequent practiced mind-body activity.
[c]OULA is a dance fitness program named after MissOULA, MT.

about how to respond to these survey items. The average missing data rate for the remaining clusters of questions were as follows: reasons for participating in mind-body practices, 13.3%; barriers to participating in mind-body practices, 16.5%, and beliefs about mind-body practices, 16.0%.

Discussion

To our knowledge, this survey is the first of its kind to evaluate participation, barriers, reasons and beliefs of mind-body practices during the early exponential growth months of the COVID-19 pandemic in the United States. This study identified that more respondents participated in mind-body practices than those who did not during the early months of the pandemic. Considering that evidence supports the use of mind-body practices for psychological benefits[27,28] and the high rates of reported stress[29,30] and anxiety[31] related to the growing pandemic, these findings are not surprising. Indeed, reducing stress was indicated as one of the top 3 reasons for respondents in this study to engage in mind-body practices.

Table 4. Characteristics of Mind-Body Practice.

Variable	Frequency (%)
Frequency of mind-body practices (n = 256)	
< 1 time per week	8 (2.4)
1 time per week	6 (1.8)
2-3 times per week	38 (11.2)
4-5 times per week	80 (23.7)
6-7 times per week	67 (19.8)
8-9 times per week	19 (5.6)
10+ times per week	38 (11.2)
Duration of mind-body practices (n = 252)	
5 minutes or less	14 (4.1)
Up to 10 minutes	16 (4.7)
Up to 20 minutes	23 (6.8)
Up to 30 minutes	32 (9.5)
Up to 40 minutes	17 (5.0)
Up to 50 minutes	19 (5.6)
Up to 60 minutes	86 (25.4)
60+ minutes	45 (13.3)
Changes in mind-body practices (n = 251)	
Increased since the pandemic started	146 (43.2)
Decreased since the pandemic started	50 (14.8)
No change	55 (16.3)

There are multiple lines of evidence that demonstrate that a relaxation response is induced by mind-body practices.[32-35] Psychological stress results in a torrent of physiological reactions that, over time, are associated with compromised physical and mental health outcomes.[36] Both acute and chronic physiologic changes manifest as elevated heart rate, blood pressure, respiratory rate and oxygen consumption, as well as metabolic changes and higher levels of cortisol.[37] Mind-body practices reverse or disrupt physiological responses to psychological stress,[38,39] resulting in normalized physiologic function. Because research has shown that there are long-term mental health consequences affiliated with infectious disease outbreaks,[40] it was encouraging to learn that respondents of the current study used mind-body practices to not only reduce stress, but to also promote health and as a form of relaxation during the initial months of the COVID-19 pandemic. These findings are similar to other studies that evaluated motivators for engaging in mind-body practices,[41-45] although the current study assessed motivators during the COVID-19 pandemic, whereas other studies did not focus on a specific time period. Providing support for the relaxation response of mind-body practices, respondents indicated that they *believed* that engaging in mind-body practices resulted in less stress, feeling happier and healthier mind.

Data relevant to barriers for participating in mind-body practices reaffirm the impact of the COVID-19 pandemic on

Table 5. Barriers for Non-Mind-Body Users.

	Level of agreement				
	Strongly disagree frequency (%)	Disagree frequency (%)	Neither disagree or agree frequency (%)	Agree frequency (%)	Strongly agree frequency (%)
Barrier					
Irregularity in schedule (n = 50)	5 (1.5)	10 (3.0)	5 (1.5)	22 (6.5)	8 (2.4)
Laziness (n = 51)	2 (0.6)	6 (1.8)	14 (4.1)	19 (5.6)	10 (3.0)
Exhaustion (n = 51)	5 (1.5)	12 (3.6)	5 (1.5)	17 (5.0)	12 (3.6)
Family commitments or responsibilities (n = 50)	5 (1.5)	10 (3.0)	9 (2.7)	14 (4.1)	12 (3.6)
Work commitments or responsibilities (n = 50)	9 (2.7)	8 (2.4)	9 (2.7)	18 (5.3)	6 (1.8)
Student commitments or responsibilities (n = 49)	19 (5.6)	5 (1.5)	17 (5.0)	6 (1.8)	2 (0.6)
Wandering of mind (n = 50)	5 (1.5)	7 (2.1)	7 (2.1)	22 (6.5)	9 (2.7)
Inability to practice in a group setting (n = 50)	8 (2.4)	9 (2.7)	12 (3.6)	14 (4.1)	7 (2.1)
Lack of access to resources (n = 51)	10 (3.0)	12 (3.6)	14 (4.1)	12 (3.6)	3 (0.9)
Low mood (n = 50)	5 (1.5)	7 (2.1)	14 (4.1)	17 (5.0)	7 (2.1)
Anxious mood (n = 50)	8 (2.4)	9 (2.7)	9 (2.7)	16 (4.7)	8 (2.4)
Lack of motivation (n = 51)	3 (0.9)	4 (1.2)	6 (1.8)	22 (6.5)	16 (4.7)
Lack of transportation (n = 50)	22 (6.5)	14 (4.1)	10 (3.0)	2 (0.6)	2 (0.6)
Weather (rain, snow, extreme heat, etc.) (n = 50)	13 (3.8)	14 (4.1)	9 (2.7)	12 (3.6)	2 (0.6)
Lack of interest (n = 52)	3 (0.9)	8 (2.4)	14 (4.1)	21 (6.2)	6 (1.8)
Other (n = 13)	1 (0.3)	10 (3.0)	2 (0.6)	0	0

Table 6. Barriers for Mind-Body Users.

	Level of agreement				
	Strongly disagree frequency (%)	Disagree frequency (%)	Neither disagree or agree frequency (%)	Agree frequency (%)	Strongly agree frequency (%)
Barrier					
Irregularity in schedule (n = 237)	29 (8.6)	39 (11.5)	30 (8.9)	88 (26.0)	51 (15.1)
Laziness (n = 239)	24 (7.1)	47 (13.9)	50 (14.8)	97 (28.7)	21 (6.2)
Exhaustion (n = 233)	29 (8.6)	50 (14.8)	44 (13.0)	86 (25.4)	24 (7.1)
Family commitments or responsibilities (n = 234)	32 (9.5)	56 (16.6)	30 (8.9)	82 (24.3)	34 (10.1)
Work commitments or responsibilities (n = 234)	36 (10.7)	45 (13.3)	42 (12.4)	72 (21.3)	39 (11.5)
Student commitments or responsibilities (n = 231)	66 (19.5)	42 (12.4)	72 (21.3)	29 (8.6)	22 (6.5)
Wandering of mind (n = 238)	23 (6.8)	46 (13.6)	41 (12.1)	102 (30.2)	26 (7.7)
Inability to practice in a group setting ((n = 233)	50 (14.8)	56 (16.6)	49 (14.5)	54 (16.0)	24 (7.1)
Lack of access to resources (n = 233)	67 (19.8)	78 (23.1)	43 (12.7)	37 (10.9)	8 (2.4)
Low mood (n = 235)	25 (7.4)	44 (13.0)	42 (12.4)	97 (28.7)	27 (8.0)
Anxious mood (n = 232)	26 (7.7)	54 (16.0)	43 (12.7)	87 (25.7)	22 (6.5)
Lack of motivation (n = 238)	19 (5.6)	45 (13.3)	48 (14.2)	97 (28.7)	29 (8.6)
Lack of transportation (n = 229)	108 (32.0)	73 (21.6)	45 (13.3)	3 (0.9)	0 (0.0)
Weather (rain, snow, extreme heat, etc.) (n = 236)	72 (21.3)	57 (16.9)	50 (14.8)	48 (14.2)	9 (2.7)
Other (n = 46)	5 (1.5)	2 (0.6)	36 (10.7)	3 (0.9)	3 (0.9)

psychological health. For both non-users and users of mind-body practices, wandering of mind and lack of motivation were commonly selected as challenges to engaging in mind-body practices. In several other studies that evaluate barriers to mind-body practices, cost and scheduling conflicts[41,45-47] are indicated as common barriers. Compounding stress related to economic hardship, fear of illness, and social isolation in the initial months of the pandemic, with the situation constantly

Table 7. Reasons for Engaging in Mind-body Practices.

	Level of Agreement				
	Strongly Disagree Frequency (%)	Disagree Frequency (%)	Neither Disagree or Agree Frequency (%)	Agree Frequency (%)	Strongly Agree Frequency (%)
Reason					
Prevent illness (n = 239)	15 (4.4)	23 (6.8)	57 (16.9)	88 (26.0)	56 (16.6)
Treat illness (n = 232)	32 (9.5)	48 (14.2)	85 (25.1)	43 (12.7)	24 (7.1)
Promote health (n = 247)	5 (1.5)	4 (1.2)	15 (4.4)	94 (27.8)	129 (38.2)
Cope with low mood (n = 236)	2 (0.6)	10 (3.0)	22 (6.5)	96 (28.4)	106 (31.4)
Cope with anxious mood (n = 243)	5 (1.5)	11 (3.3)	26 (7.7)	83 (24.6)	118 (34.9)
Reduce stress (n = 248)	2 (0.6)	3 (0.9)	12 (3.6)	102 (30.2)	129 (38.2)
Relaxation (n = 243)	2 (0.6)	6 (1.8)	19 (5.6)	117 (34.6)	99 (29.3)
Fun (n = 245)	7 (2.1)	11 (3.3)	43 (12.7)	98 (29.0)	86 (25.4)
Exercise (n = 245)	7 (2.1)	11 (3.3)	20 (5.9)	79 (23.4)	128 (37.9)
Other (n = 57)	3 (0.9)	3 (0.9)	34 (10.1)	4 (1.2)	13 (3.8)

Table 8. Beliefs About Mind-Body Practices.

	Level of agreement				
	Strongly disagree frequency (%)	Disagree frequency (%)	Neither disagree or agree frequency (%)	Agree frequency (%)	Strongly agree frequency (%)
Belief					
Improved sleep (n = 239)	2 (0.6)	9 (2.7)	56 (16.6)	118 (34.9)	54 (16.0)
Improved energy level (n = 239)	0	6 (1.8)	48 (14.2)	125 (37.0)	60 (17.8)
Improved health (n = 236)	1 (0.3)	7 (2.1)	67 (19.8)	115 (34.0)	46 (13.6)
Improved diet (n = 236)	5 (1.5)	35 (10.4)	97 (28.7)	68 (20.1)	31 (9.2)
Healthier mind (n = 238)	0	3 (0.9)	36 (10.7)	129 (38.2)	70 (20.7)
Healthier weight (n = 235)	8 (2.4)	39 (11.5)	85 (25.1)	74 (21.9)	29 (8.6)
Consume less alcohol (n = 233)	17 (5.0)	42 (12.4)	113 (33.4)	33 (9.8)	28 (8.3)
Happier (n = 239)	0	4 (1.2)	30 (8.9)	132 (39.1)	73 (21.6)
Improved relationships (n = 236)	0	6 (1.8)	60 (17.8)	114 (33.7)	56 (16.6)
Less stressed (n = 237)	2 (0.6)	3 (0.9)	24 (7.1)	139 (41.1)	69 (20.4)
Other (n = 42)	1 (0.3)	0	31 (9.2)	5 (1.5)	5 (1.5)

evolving, caused uncertainty from a variety of perspectives. Furthermore, during shelter in place orders and self-isolation, individuals potentially spent more time on social media. While reputable organizations like the World Health Organization and Centers for Disease Control and Prevention utilize social media platforms to disseminate reliable information, misinformation is also widely spread on social media. Therefore, it is not surprising that participants in our sample reported wandering of mind as a frequent barrier to participating in mind-body practices, which may, in part, be explained by a surge in information (information overload) from multiple sources about COVID-19. Finally, a link between psychological stress and fatigue has been established,[48-50] potentially explaining why lack of motivation commonly prohibited respondents from taking part in mind-body activities.

In our sample, there were no significant associations found between general physical or mental health and change in frequency in mind-body practices. The majority of respondents indicated that the level of physical activity prior to the current pandemic was moderate or high. Similarly, participants predominately reported that both their general and mental health were "good" or "very good." The evidence base for the relationships between physical activity, including mind-body focused physical activity,[51-54] and physical health[51,54-58] and mental health[52-54,59] are well established. Additionally, there is evidence of a bidirectional association between mental health and physical activity,[60-62] suggesting that mental health status may influence the ability or decision to participate in physical activity. The finding that our sample largely had an established physical activity regimen prior to the start of the pandemic, coupled with overall stable general physical and mental health, might explain the lack of a significant association between general physical or mental health and change in frequency in mind-body practices. However, it was encouraging to know

that mind-body practices increased since the start of the COVID-19 crisis, but this finding does not appear to have an association with general health status.

Finally, type of mind-body practice (practitioner or face-to-face mandatory and self-administered or easily available online) was not associated with any of the barriers that were evaluated to participating in mind-body practices. The most frequent barriers reported were wandering of mind, lack of motivation, and low mood, and considering, on one hand, it seems logical that these barriers are not significantly associated with the type of mind-body practice. However, it was surprising to learn that, in our sample, barriers like inability to practice in a group setting were not associated with type of mind-body practice. While exercise and mind-body practices are not necessarily the same, evidence shows that exercise practiced with others is more beneficial with respect to mental health[63,64] and health outcomes[65] than exercising alone, and some individuals prefer to exercise in groups.[66,67] Government shutdowns, though, played a significant role in the ability to practice mind-body activities in groups. It is inspirational that the majority of respondents of our survey reported continued use of mind-body practices during the beginning of the COVID-19 pandemic despite group activities being unavailable. This may suggest that individuals continue to utilize mind-body activities during times of uncertainty and stress.

Even though the findings from this research are interesting, there are important limitations to consider. In general, anonymous Internet-based surveys are subject to bias;[23,68] notably, with respect to the Internet population being unrepresentative of the general population.[68] Importantly, our sample characteristics may not be representative of the general population, although some of the characteristics (e.g., identifying with female gender, Caucasian and college educated) appear to be consistent with other national survey studies of mind-body practices.[22,41-43,69] However, our sample was primarily represented by respondents from the West region of the United States. It is not clear if the findings would be similar with equal distribution of respondents across all regions of the country. Additionally, there was a surprisingly moderate rate of missing data for 2 of the survey questions. Despite n = 13 individuals testing the survey prior to publishing it, the 2 survey questions that had higher amounts of missing data than the other survey items, may have been unclear. The consequence of missing data for these items is there might be an under representation of which mind-body practices were actually accessed during the timeframe of interest.

Another limitation relates to the language used in social media advertising. Because "mind-body practices" was used in the advertisements, individuals familiar with this nomenclature may have been drawn to the survey, resulting in an over-representation of individuals who used mind-body practices during the early months of the pandemic. It would be interesting to conduct a survey using a variety of advertising language to see if a more representative sample is recruited.

Conclusion

At the time of writing this manuscript, the COVID-19 pandemic in the United States continues to result in fear of illness, self-isolation and uncertainty about the future. Further, individuals and families are coping with the loss of loved ones related to COVID-19, in addition to increased workload for some jobs and professions. The findings from this research are a good reminder that during times of stress, mind-body practices can be accessed to help reduce psychological discomfort. As the COVID-19 pandemic continues and health providers navigate rising mental health concerns, recommending that patients engage in activities that are beneficial to both the mind and body has the potential to impact public health related to both physical and mental health.

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Author Contributions

Tracy Hellem, conceptualization, methodology, investigation, formal analysis, writing – original draft. **Sandra Benavides-Vaello**, methodology, investigation, writing – review and editing. **Ruth Taylor-Piliae**, methodology, investigation, writing – review and editing.

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Ethical Approval

The institutional review board of a university in the northwestern United States approved this study (approval number TH042420-EX).

Supplemental Material

Supplemental material for this article is available online.

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