The Science Behind Headspace
As patients search for more holistic and less invasive solutions, the Health and Science team at Headspace is at the forefront of research on the benefits of mindfulness and meditation. And the ability we have to live a happier, healthier life from using Headspace is now becoming more established, and with promising results. Our published and ongoing research is highlighted below, along with general information about Headspace, meditation, and bios of our team members.
How Headspace Began

Headspace’s co-founder, Andy Puddicombe, was ordained as a Tibetan Buddhist monk after studying meditation and mindfulness in the Himalayas for ten years. Upon returning to his home in the U.K., he felt inspired to share his wisdom and passion with a larger audience. He was then introduced to Headspace’s CEO and co-founder Rich Pierson, and together they sparked Headspace and the company’s mission to improve the health and happiness of the world.
What is Meditation

The practice of meditation is a rich, age-old tradition that has taken on a variety of forms since its origin. Simply put, it's the act of awareness training. You may have heard it as something meant for hippies or people with spiritual inclinations. But meditation is really a grounded, science-backed practice meant for anyone looking to cultivate a clearer mind. And by creating this clarity, meditation allows us to gain a new perspective, observe without judgment and better understand our thoughts and feelings. And that's just for starters.
While related, meditation and mindfulness are actually pretty different. Mindfulness is the idea and intention of being present, and of emptying our busy minds of distractions and judgments. And the practice of meditation is one technique that fosters mindfulness. As a whole, meditation – and the mindfulness that comes from practicing it – has substantial benefits on cognitive control, stress management, and happiness. And these effects can reverberate throughout many aspects of our lives.
Meet our Science and Research Team

Dr. Megan Jones Bell
M.S. and Psy.D. in Clinical Psychology

Dr. Megan Jones Bell is Chief Science Officer at Headspace, a leader in the field of digital health and a visionary in making mental health care more effective, affordable, and accessible to all populations. Megan leads the company’s seven-person Health and Science team, which focuses on clinically validating the benefits of meditation with Headspace and commercializing the product within health care. Megan also oversees the 65+ clinical research studies conducted by Headspace’s academic partners.

Emily Durden
M.A. and Ph.D. in Sociology

Emily Durden, PhD, Director of Health Economics and Outcomes Research at Headspace, has more than 12 years of postdoctoral experience in the design and leadership of health outcomes, comparative effectiveness, and epidemiologic studies, with specialization in real-world evidence and real world data. Her work has been published in health outcomes and social epidemiology literature, and has been presented at numerous clinical, social science, and health economics meetings. Her research experience spans a variety of areas including mental health, diabetes, cardiovascular disease, and the social determinants of health.

Amy Steig
M.S. of Physiology and Nutrition, Ph.D. in Physiology

Amy Steig is the Director of Clinical Affairs and Research Partnerships here at Headspace. She’s earned several advanced degrees in exercise, nutrition and physiology. Amy is at the forefront of our Health and Science team to bring meditation and mindfulness to the health care sector – to both patients and providers.

Janis Martman
MSc, Positive Psychology

Janis Martman leads Behavioral Science for Headspace Health, where she designs evidence-based programs for people with chronic health conditions. She is passionate about using technology to improve health outcomes in an accessible and engaging way.

Sarah Romotsky
Registered Dietician

Sarah Romotsky is the Director of Health Care at Headspace. She has studied communications in the past and is a Registered Dietitian, coming from extensive experience within the wellness and health-tech space. Sarah has been with Headspace for several years and is at the forefront of shaping the future of Headspace Health and Health Care Partnerships.

Clare Purvis
Doctor of Psychology

Dr. Clare Purvis is Director of Behavioral Science at Headspace, where she helps to ensure that Headspace inspires, guides, and supports our members in living healthier and happier lives. Prior to joining Headspace, Clare was a health care design fellow in the Clinical Excellence Research Center (CERC) at Stanford University, and previously led clinical product and coaching at Lantern, an evidence-based digital mental health company. Clare is also an affiliated scholar at Stanford CERC, where she provides consultation on the use of technology to make great health care more affordable.
Our Published Research

*The following studies are a partial selection. Please refer to the Appendix on slide 26 to see a complete list.*
The Science Behind Headspace

Contents

Headspace for Individuals with Chronic Condition Diagnoses

A Pilot Mobile-Based Mindfulness Intervention for Cancer Patients and Their Informal Caregivers (Kubo et al., 2018.)

Quality of Life Among Women Diagnosed with Breast Cancer: A Randomized Waitlist Controlled Trial of Commercially Available Mobile App-Delivered Mindfulness Training (Rosen et al., 2017)

Headspace for Individuals with Burnout and/or Mental Health Diagnoses

Mindfulness On-The-Go: Effects of a Mindfulness Meditation App on Work Stress and Well-Being (Bostock et al., 2018)

Mobile Mindfulness Intervention on an Acute Psychiatric Unit: Feasibility and Acceptability Study (Mistler et al., 2017)

A Mindfulness Intervention for Residents: Relevance for Pediatricians (Taylor et al., 2016)

Encouraging Mindfulness in Medical House Staff via Smartphone App (Wen et al., 2017)
Headspace for Individuals with Chronic Condition Diagnoses
Mindfulness Intervention for Cancer Patients and Caregivers

Summary

While clinicians provide incredible medical care to cancer patients, they generally have few tools to help patients and their caregivers manage rising anxiety and stress levels that often come with a new cancer diagnosis. This study utilized evidence-based tools to help patients and caretakers better handle the psychological side effects of their illnesses.

Population: Kaiser Permanente patients diagnosed with cancer and their caretakers

Sample Size: 42 participants- 28 cancer patients undergoing chemotherapy and 14 caregivers (all above the age of 18)

Intervention: 8-week Headspace program, including a 30 day foundational course and supplemental content covering topics such as anxiety, stress, acceptance, sleep and more

Outcomes

- Patients and caregivers both experienced statistically significant reductions in distress levels and anxiety
- Patients displayed an increase in mental quality of life and improved sleep scores
- Caregivers demonstrated an increase in physical quality of life and reported decreased fatigue
- 82% of patients and 77% of caregivers reported that Headspace was “very useful” or “extremely useful.”

Conclusions

This study displays the potential of using Headspace as an intervention for individuals dealing with a variety of chronic and acute illnesses. The preliminary results of improvements in anxiety, depression, quality of life, fatigue and sleep indicate great potential for future mindfulness-based interventions.

Full Study: A Pilot Mobile-Based Mindfulness Intervention for Cancer Patients and Their Informal Caregivers (Kubo et al., 2018)
Quality of Life Among Women Diagnosed with Breast Cancer

Summary

Women diagnosed with breast cancer often experience a variety of side effects - both affecting their mental and physical quality of life (QOL). This study evaluates the effectiveness of “app-delivered mindfulness training” (AMT) on the quality of life of women with breast cancer. 78% of breast cancer patients suffer from chronic pain - a factor highly related to poor quality of life outcomes. An 8-week Headspace intervention is expected to result in higher QOL in comparison to the control group, and the effects are hypothesized to persist for 4 weeks following the intervention (and beyond).

Population: Women ages 29–73 living in the U.S. who had been diagnosed with breast cancer within the previous 5 years. No stage exclusions, but 33% of participants were stage II.

Sample Size: N = 112

Intervention: 57 women were given a 6-month subscription to Headspace and told to start with a 10-day foundation course, and then free to use any other content. 55 women were assigned to a waitlist control group and were granted access after 6 months of self-assessing without mindfulness training.

Outcomes

- 66% of the participants completed all assessments - the days of use of the app ranged from 1 to 78 days throughout the 12-week trial
- Baseline QOL measurements were higher among those who completed the assessment versus those who did not
- Participants in the AMT group reported improved QOL after 4 weeks of follow up in comparison to the control group, who did not report improved QOL
- AMT group also reported closer adherence to the treatment program than the control group

Conclusions

The findings of this study indicate that app-delivered mindfulness training - and specifically Headspace - has the potential to deliver fantastic benefits to women diagnosed with breast cancer. This study displays that Headspace can improve the quality of life and the “dispositional mindfulness” of individuals through utilization of the app over a relatively short period of time.

Full Study:

Quality of Life Among Women Diagnosed with Breast Cancer: A Randomized Waitlist Controlled Trial of Commerically Available Mobile App-Delivered Mindfulness Training (Rosen et al., 2017)
Headspace for Individuals with Burnout and/or Mental Health Diagnoses
Effects of a Meditation App on Work Stress and Well-Being

Summary

This study aims to evaluate whether incorporating a mindfulness practice – specifically Headspace – can effectively improve psychological wellbeing, reduce job strain, and lower blood pressure for employees at Google and Roche UK. Given that job stress and burnout is a growing issue as our work lives and personal lives become increasingly intertwined, Headspace can be integrated in companies’ benefits packages as a useful tool to improve employee wellbeing.

Population: Generally healthy employees from Google and Roche randomized to Headspace group or control group

Sample Size: N = 238

Intervention: 8-week intervention during which users completed an average of 17 meditation sessions

Outcomes

• Intervention group reported improvement in well-being, distress, job strain, and perceptions of workplace social support
• Lower systolic blood pressure among intervention group
• Sustained beneficial impacts found among intervention group at 16-week follow-up assessment

Conclusions

Given the high levels of stress and burnout that are often present in the workforce, this study implies that mindfulness-based interventions may prove highly beneficial and impactful for working adults. Job burnout is becoming an increasingly pertinent issue to much of the country (and the world) and this study displays that meditation can be an extremely effective method of intervention.

Full Study:
Mindfulness On-The-Go: Effects of a Mindfulness Meditation App on Work Stress and Well-Being (Bostock et al., 2018)
Mobile Mindfulness Intervention on an Acute Psychiatric Unit

Summary
The purpose of the study was to look into the effectiveness of using Headspace as a means of reducing anger and aggression among acute psychiatric inpatients diagnosed with a variety of mental illnesses. It has been found that 17% of inpatients engage in violent acts while hospitalized, resulting in high costs to deal with staff injuries. In addition to physical injuries, hospital staff often feel a decreased sense of workplace morale, increased job dissatisfaction, and can end up providing a decreased quality of patient care.

Population: Inpatients (age 18–65) at an acute care state hospital diagnosed with schizophrenia, schizoaffective disorder, bipolar disorder, and/or a history of violence

Sample Size: N = 13

Intervention: Seven day Headspace intervention as a proven mindfulness-based stress reduction technique

Outcomes
- All participants confirmed that the app was user-friendly and the information presented was clear
- Most participants reported learning valuable skills during their 7-day trial with Headspace - specifically increased bodily awareness and breathing exercises in order to control their anger and anxiety
- Several participants reported that the app helped with boredom throughout their stay at the hospital

Conclusions
While this study is one of the first in which Headspace (or any digital mindfulness tool) is used in a psychiatric inpatient unit, the results are promising for future studies. Given the high rates of aggression among inpatients, utilizing Headspace as a tool to reduce rates of aggression holds promising potential.

Full Study:
Mobile Mindfulness Intervention on an Acute Psychiatric Unit: Feasibility and Acceptability Study (Mistler et al., 2017)
A Mindfulness Intervention for Residents: Relevance for Pediatricians

Summary

Given the relevance of physician burnout - defined as emotional exhaustion, depersonalization, and decreased feelings of personal accomplishment - utilizing mindfulness interventions has become increasingly appealing. Evidently, physician burnout not only impacts the individual health care providers, but affects their patients and the care they receive. Therefore, discovering effective solutions to aid physician burnout is a top priority in today's health care system. This study aims to examine the potential effectiveness of mindfulness interventions on resident populations specifically.

Population: Residents from the pediatric residency program at the University of Chicago

Sample Size: N = 33

Intervention: 10-day Headspace practice, 10-minute sessions per day. 31 of the 33 participants completed the initial survey and 11 completed a follow-up survey

Outcomes

- After using Headspace for ten days, residents overall expressed a high level of personal accomplishment
- Emotional exhaustion remained highly reported, however, all participants also reported that they would consider discussing mindfulness as a therapeutic option for their patients

Conclusions

While self-reported levels of emotional exhaustion was not highly impacted by ten days of Headspace, this intervention displays great potential in other ways: Headspace proves to increase feelings of personal accomplishment, and is also a promising intervention for physicians to provide to their patients. Additionally, the overall convenience of using a mobile app for an intervention such as this creates an even more compelling argument - and Headspace specifically has proven successful for this population.

Full Study:

A Mindfulness Intervention for Residents: Relevance for Pediatricians (Taylor et al., 2016)
Encouraging Mindfulness in Medical House Staff

Summary
Physician burnout is posing a threat to patients and physicians in all parts of the medical field. Burnout not only impacts physicians and results in reduced quality of life and potential suicide ideation, but also impacts the quality of patient care. Therefore, finding convenient and effective interventions to reduce burnout is a top priority within the medical practice and health care industry.

Population: General surgeons, anesthesiologists, and OBYGNs at Stanford University Hospital (all above 21 y/o)

Sample Size: N=43. All participants surveyed when enrolled, and 30 residents (90% female) completed two or more surveys while using the app - making them eligible for further analysis.

Intervention: 30-day Headspace intervention - during which participants could use the guided sessions or animations - to evaluate changes to residents’ quality of life and wellness

Outcomes
- The participants took three surveys that measured stress and negative emotions (Positive and Negative Affect Schedule - PANAS) as well as perceived mindfulness (Freiburg Mindfulness Inventory - FMI).
- PANAS and FMI scores showed significant positive change correlated with increasing use of Headspace.
- Participants took a survey to indicate how useful they found the app (1 = "not useful" and 4 = "very useful"). At week 4, the average rating was 2.86 out of 4.

Conclusions
The study displays statistically significant correlations between stress, negative emotions and mindfulness, and use of the Headspace app. This seems to indicate that a larger rollout of Headspace among physicians could similarly result in lower stress levels, improve emotional state, and improve mindfulness. Once again, not only will this positively affect physicians, but their patients as well.

Full Study:
Encouraging Mindfulness in Medical House Staff via Smartphone App (Wen et al., 2017)
Our Ongoing Research
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Use of a Self-Guided Mindfulness Mobile Application to Improve Pain Outcomes in Individuals with Knee Osteoarthritis

**Study Aim**
Examine the effectiveness of Headspace on chronic pain management in osteoarthritis patients

**Population:** Male and female patients age 18-74 with knee osteoarthritis

**Sample Size:** 90 Headspace users, 90 in control group

**Intervention:** 12-week Headspace program and in-person demonstration of how to use the app. Intervention group will be asked to use the app for 10 minutes, 5 days a week. Specifically, they will be recommended the packs “Essentials,” “Pain Management,” and “Physical Health”

**Outcomes**
- The effects of Headspace/meditation practices on chronic knee pain
- Effects of quality of life at baseline may be more significantly impacted by incorporating a meditation/mindfulness practice

**Target Completion Date:** February 2022
Using Mindfulness Training to Reduce Delay Discount in Rural Adult Smokers / University of Kentucky

**Study Aim**

Use mindfulness training (Headspace) to shift smokers’ mindset to more long-term outcomes (reducing delay discounting) and promote healthier behavior

**Population**: Male and female cigarette smokers between 18 - 40 years old from rural counties in Kentucky (Rowan, Bath, Menifee, and Morgan)

**Sample size**: N = 19 (18 females)

**Intervention**: Participants will engage with the Headspace foundation course over 30 days - 10 minutes per day. They will be surveyed before the study, three times during the foundation course, and 30 days following the foundation.

**Outcomes**

- Mindfulness intervention expected to positively impact smokers’ resistance to delay discounting
- Intended lower levels of stress with a mindfulness intervention
- Analysis on whether there is a significant change in rate of smoking and nicotine dependence pre- and post-study

**Target Completion Date**: 20-month study, will be completed 24 months from start (exact dates unclear)
UCSF Stress Study

**Study Aim**
Evaluate the effectiveness of Headspace on stress and stress-related symptoms, distress, physical health, and work outcomes

**Population:** All participants must be clinically overweight (BMI > 25), fluent in English, at least 18 y/o, and report high stress levels

**Sample size:** N = 225 (~112 per group)

**Intervention:** 8-week intervention of Headspace for participants, and the waitlist control group will be given no instructions regarding their Headspace usage.

**Outcomes**
- Expected that Headspace users will report decreased stress levels / symptoms, and better work outcomes and physical health after the 8-week Headspace intervention

**Target Completion Date:**
Projected date of completion TBD
The Science Behind Headspace

Our Ongoing Research

Depression / University of Sussex

Study Aim
Evaluate the feasibility and effectiveness of Headspace in depression (as an alternative to CBT self-help intervention). Quantitative and qualitative data will be collected.

Population: Study subjects are adults experiencing mild to moderate depression in England.

Sample size: N = 54

Intervention: Intervention includes 30 sessions of Headspace + 6 support sessions in 8 weeks

Outcomes
- Pre/post effect sizes for depression, anxiety, mindfulness and worry.

Target Completion Date:
Results reviewed June 2019
Mobile app-based mindfulness intervention for cancer patients and caregivers – Kaiser Permanente Northern California

Target Completion Date:Projected date of completion TBD

Study Aim
1) Obtain patient and caregiver input regarding the acceptability and usability of Headspace for cancer patients and 2) To test the feasibility of conducting a randomized study to deliver Headspace to patients undergoing chemotherapy / their caregivers

Population: Oncology departments at Kaiser Permanente Medical centers and the cancer patients who are undergoing chemotherapy and their caregivers

Sample size: N = 50 (so far 34 patients / 11 caregivers)

Intervention: 8-week randomized controlled trial. Effectiveness will be measured by baseline surveying, mid-way surveying, and post-surveying. Qualitative interviews will be conducted after the 8-week intervention

Outcomes
• Mindfulness-based stress reduction often results in reduced anxiety and depression
• If study is feasible and promising, preliminary data will be used to formulate larger randomized clinical trials at Kaiser Permanente and beyond
Meditation for Pain

**Study Aim**

1) Examine whether meditation (Headspace specifically) decreases self-reported pain, distress, and narcotic use among postoperative patients, 2) Examine the ways in which mindfulness impacts pain processing among postoperative patients, and 3) Examine the demographics of who engages with Headspace and furthermore, who benefits most

**Population:** Patients from Emory Healthcare (excluding children and prisoners)

**Sample size:** N = 1,000 (500 in control and Headspace groups)

**Intervention:** Subjects take pre-survey and randomized to a 6-week Headspace intervention or control group. Those in Headspace group are recommended to meditate 10 minutes a day for the 6 week period. Mid-way and post-survey data also collected.

**Outcomes**

- Discover whether self-reported pain and rates of narcotic use goes down in Headspace group compared to numbers of control group
- Examine connection between mindfulness practice and changes in pain distress / narcotic use
- Investigate connections between demographic and engagement with Headspace

Target Completion Date:

Projected date of completion TBD
A definitive randomised controlled trial investigating two online well-being interventions to reduce NHS staff stress

**Study Aim**

1) Examine whether meditation (Headspace specifically) decreases self-reported pain, distress, and narcotic use among postoperative patients, 2) Examine the ways in which mindfulness impacts pain processing among postoperative patients, and 3) Examine the demographics of who engages with Headspace and furthermore, who benefits most

**Population:** Employees of Surrey, Kent, or Sussex NHS trusts who are in direct contact with patients at least once a week, and who are willing to refrain from alternative forms of psychotherapy

**Sample size:** N = 2,116

**Intervention:** Two groups - one assigned to Headspace, one to Moodzone. Participants asked to engage with their app for ten minutes per day during first 30 days, then will be followed for 3 additional months

**Outcomes**

- Using Depression Anxiety and Stress Scale to measure self-reporting data in comparison to participants’ baseline data
- Looking into sickness absence — and if the number is affected after using Headspace
- Compassion for self and others, burnout, mental well-being, rumination, and worrying measured pre- and post-intervention

**Target Completion Date:**

9-month study, projected date of completion TBD
Appendix

All Published Headspace Studies
Workplace-induced Stress Implications

"Mindfulness on-the-go: Effects of a mindfulness meditation app on work stress and well-being" (Bostock et al., 2019)

"Mindfulness for Novice Pediatric Nurses: Smartphone Application Versus Traditional Intervention" (Morrison Wilde et al., 2017)

Mindfulness On-The-Go: Effects of a Mindfulness Meditation App on Work Stress and Well-Being (Bostock et al., 2018)

Encouraging Mindfulness in Medical House Staff via Smartphone App (Wen et al., 2017)

Behavioral / Quality of Life Implications

"Improvements in Stress, Affect, and Irritability Following Brief Use of a Mindfulness-based Smartphone App: A Randomized Controlled Trial" (Economides et al., 2018)

"Happier Healers: Randomized Controlled Trial of Mobile Mindfulness for Stress Management" (Yang et al., 2018)

"Meditation Inhibits Aggressive Responses to Provocations" (deSteno et al., 2018)

"Putting the 'app' in Happiness: A Randomised Controlled Trial of a Smartphone-Based Mindfulness Intervention to Enhance Wellbeing" (Howells et al., 2014)

"Mindfulness and Compassion: An Examination of Mechanism and Scalability" (Lim et al., 2015)

"The efficacy of a brief app-based mindfulness intervention on psychosocial outcomes in healthy adults: A pilot randomised controlled trial" (Champion et al., 2018)

Quality of Life Among Women Diagnosed with Breast Cancer: A Randomized Waitlist Controlled Trial of Commercially Available Mobile App-Delivered Mindfulness Training (Rosen et al., 2017)

Mobile Mindfulness Intervention on an Acute Psychiatric Unit: Feasibility and Acceptability Study (Mistler et al., 2017)

General Implications

A Pilot Mobile-Based Mindfulness Intervention for Cancer Patients and Their Informal Caregivers (Kubo et al., 2018)

"A randomised active-controlled trial to examine the effects of an online mindfulness intervention on executive control, critical thinking and key thinking dispositions in a university student sample" (Hogan and Noone, 2018)

"Online-based Mindfulness Training Reduces Behavioral Markers of Mind Wandering" (Bennike et al., 2017)

"Review and Evaluation of Mindfulness-Based iPhone Apps" (Mani et al., 2015)

"Making time for mindfulness" (Blandford and Laurie, 2016)

"Mobile Mindfulness Meditation: a Randomised Controlled Trial of the Effect of Two Popular Apps on Mental Health" (Flett et al., 2018)

A Mindfulness Intervention for Residents: Relevance for Pediatricians (Taylor et al., 2016)