Spring 5-28-2022

Smiling Mind: A Mobile Based Application to Reduce Stress

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Abstract

It has been recognized healthcare professionals experience high levels of stress at work with many working in environments characterized by high productivity targets, overtime, customer aggression, continuous organizational changes, and employee shortages. Mindfulness-based interventions such as mobile based meditation applications have gained popularity in the workplace given their potential benefits in decreasing workplace related stress, their ease of use, and cost-effectiveness. The purpose of this evidence based project (EBP) project was to reduce perceived workplace stress and to increase mindfulness using a mobile meditation application. Employees of an outpatient psychiatric clinic used the mobile meditation application Smiling Mind to meditate for 10 minutes for 30 days. Workplace stress was measured by the Perceived Stress Scale (PSS) and increase in mindfulness was measured by the Mindful Attention Awareness Scale (MAAS). Questionnaires were completed pre- and post-intervention. At the end of the 30 days, participants experienced a decrease in the PSS scores of 36% and an increase in the MAAS scores of 24%. Participants reported feeling less stressed at work, improvement in their mental well-being, and enhanced work performance. Many participants continued to use the mobile application after completion of intervention.

Keywords: mindfulness, mental health, workplace stress, meditation, mobile application

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Many workers, particularly those in the healthcare field, work in environments characterized by high productivity targets, overtime, customer aggression, continuous organizational changes, and employee shortage (Janssen et al., 2018). Mindfulness practice has the ability to increase productivity, decrease stress, and improve organizational relationship in the workplace. The goal of mindfulness-based stress reduction in the workplace is to provide a new coping mechanism by learning to recognize autonomic reactions and letting go of dysfunctional ones (Gotink et al., 2016). There are many mobile applications for daily meditation that are simple and easy to use that can be done anywhere such as home and in the workplace.

Evidence-Based Practice Model

The Ottawa model was used to guide this project because it provided an organized approach to identifying those in the position to make needed changes, assess barriers and facilitators, and monitor and evaluate the outcomes of this project. This intervention was expected to work for several reasons. The intervention was simple and was of no cost to the participants. The intervention was provided during a time in which many participants experienced work related stress due to the COVID-19 pandemic. This project aimed to implement a 4-week trial of a mobile meditation application called Smiling Mind in a mental health setting to reduce perceived stress and increase mindfulness of staff members.

Literature Review

A literature search which included the terms mindfulness-based stress reduction, meditation, mobile applications, and occupational health was used to identify the best literature for this project. The databases used were PubMed, ScienceDirect, UpToDate and CINAHL. An initial search of the databases yielded 11,654 articles. After using more precise terms, the

number of relevant articles decreased to 3,812. The inclusion criteria included both males and females, adults, and year of publication ranging from 2016-2020. The exclusion criteria were children and adolescents. Literature was narrowed further to systematic reviews and meta-analysis.

Efficacy of Mindfulness Meditation Apps in Users' Well-Being

Mindfulness meditation apps have become one of the most commonly used apps in the mental health and wellbeing category. There are more than 260 apps available for use. Digital delivery of psychological treatments has become popular due to the ease of accessibility. Gal et al. (2020) conducted a meta-analysis of randomized controlled trials (RCTs) to explore mindfulness meditation apps as the main intervention to improve wellbeing and mental health. Studies were found from a literature search of the databases PubMed, Web of Science, PsychINFO, ProQuest Dissertations and Theses Global, and Cochrane Library from inception until June 2020. Thirty-four RTCs were identified and included 7,612 participants. Of that group, 64% of participants were women. The mean age of participants ranged from 17 to 58 years (Gal et al., 2020).

A few limitations were identified. The small number of existing studies make estimations of wellbeing and mental health outcomes unreliable. In addition, in almost half of the studies available, researchers used one app, Headspace, which limits the generalizability of the conclusions (Gal et al., 2020). Non-adherence was an issue that was high among the studies included. Future research will need to address whether there are benefits for the entire pool of users and not just a selected sample.

It was concluded at post-test there were significant effects on perceived stress, anxiety, depression, and psychological well-being with 95% confidence interval (CI). However, there

were no significant effects found for distress or general well-being (Gal et al., 2020).

Mindfulness apps have the potential to improve self-management of well-being and mental

health. These apps are easily accessible and a cost-effective way to promote mental health and

well-being.

Effects of Mindfulness-Based Stress Reduction on employees' mental health

This systematic review explored the effects of mindfulness-based stress reduction

(MBSR) and mindfulness-based cognitive therapy (MBCT) on the mental health of employees.

Three databases (PsychINFO, PubMed, and CINAHL) were used to identify 24 articles to be

included in this review, with the primary focus on MBSR. Sample size of studies were small and

ranged 10 to 24 participants, with the mean age being over 40 years (Janssen et al., 2018).

There were a few limitations to this review, including small sample sizes. Small sample

sizes can significantly impact essential interpretation of findings. Most participants in the studies

were healthcare providers; those who work in other settings should be included to have a broader

understanding of how MBSR affects different occupational sectors (Janssen et al., 2018). The

biggest limitation of the study was self-selection. Self-selection can result in biased samples due

to voluntary participation of employees.

The strongest outcomes identified by this review were reduced levels of emotional

exhaustion, stress, depression, anxiety, and occupational stress. There were improvements noted

in mindfulness, self-compassion, and relaxation (Janssen et al., 2018). This review is used to

suggest MBSR may improve employees' psychological functioning, particularly those who work

in the healthcare field, where they experience many challenges and work under high pressure.

Effectiveness of the Mindfulnes Based Stress Reduction Program

Cardiovascular disease is the leading cause of death in the United States. A main modifiable risk factor in its development is high blood pressure. Despite advances of hypertension prevention and treatment, there's still a high number of people with uncontrolled blood pressure (López, 2018). This review aimed to examine the effectiveness of MBSR programs in decreasing blood pressure in adults. A literature review of RCTs was conducted on studies published between 2012 and 2017 with the use of the databases PubMed, EMBASE, Web of Science, PsychINFO, and Cochrane Library. Five articles met the inclusion criteria to be included in the final review. Sample sizes varied between 20 to 101 participants with 267 total participants in the studies. The number of male and female participants was balanced across all studies. There were some limitations to this review, including the small sample size of studies, low research quality, and incomplete reporting (López, 2018). The studies varied in protocols and methods to assess blood pressure with most measuring blood pressure in a clinical setting and not in an ambulatory setting.

There was significant reduction in clinical blood pressure from pre- to post-test between intervention and control groups. However, studies that reported ambulatory blood pressure showed no significant difference in blood pressure. This review concluded that MBSR programs may be an effective complimentary therapy for blood pressure control. Additional research is needed to assess the effectiveness of MBSR in patients with high blood pressure in both clinical and ambulatory settings.

Methods

Approval was received by the organization and internal review board of the University of San Diego. An email was sent to staff members of the program in which this intervention took

place. Participants were adults older than 18 who were employed by the organization and

working in behavioral health. Thirteen participants were recruited for this intervention including

nurses, social workers, therapists and front office staff. Participants were instructed to download

the mobile meditation application Smiling Mind. Participants then completed the pre-

intervention surveys. Stress was measured by the PSS and mindfulness was measured by the

MAAS. Participants meditated for 10 minutes a day for 30 days. At the end of the 30 days,

participants completed the PSS and MAAS an additional time and once surveys were returned,

the $10 gift card was provided. Data analysis was conducted through Intellects Statistics using

the two-tailed paired samples t test to analyze the difference between the pre and post totals.

Results

The intervention initially began with 13 participants. However, three participants dropped

from the intervention. Two participants did not return their pre-intervention surveys and one

participant dropped during the intervention due to contracting COVID-19 infection and missing

several days of meditation. Ten participants completed the intervention from start to finish.

The starting average score for the PSS was 18.7. This score decreased to 11.9 post

intervention. The starting average of scores for the MAAS was 3.55. This score increased to 4.4

post intervention. A side-by-side comparison of each participant's pre and post scores is

presented in Tables 1 and 2. Seven of 10 participants fell on the moderate range of the PSS,

while one out of the 10 participants fell in the high range of the PSS scale. Only two participants

fell in the low range of the PSS scale. Post intervention, those who reported low stress remained

in that range with scores that were a bit lower than their initial. Four out of 10 participants

reported moderate stress post intervention while most of the participants reported low stress post

intervention.

The lowest starting score for the MAAS was 2.3, this score increased to 3.8 post intervention. The highest MAAS pre-intervention score was 4.5, this score increased to 5.8 post intervention. There was a decrease of 36% (pre-PSS, *M* 18.70, SD 6.25, post PSS, *M* 11.90, *SD* 4.63, *t* 5.38, *p* <.001, *d* 1.70) in the PSS and an increase of 24% (pre-MAAS, *M* 3.55, *SD* 6.25, post MAAS, *M* 4.40, *SD* 0.73, *t* -5.75, *p* <.001, *d* 1.82) for the MAAS. Participants were not required to continue to use Smiling Mind post intervention; however, several participants provided positive feedback from using the application and continued to use it daily post intervention.

Summary

Participants of this project provided positive feedback such as feeling less stressed while at work and that the 10 minutes of meditation a day was a nice relaxing break from their day. Some participants used the group meditation with their children at home. The outcomes of this project were met by decreasing stress and increasing mindfulness in participants. Strengths of this project included feasibility, low cost, and effectiveness in decreasing stress and increasing mindfulness.

Limitations

Limitations of this project included gathering enough participants. During the stressful COVID-19 pandemic, many participants did not want to add an additional task to complete daily. A $10 gift card incentive was provided to participants to ensure they would complete the meditation daily for 30 days. Another possible limitation was the surveys used in for this project. These surveys depend on the perception of the participant which may subject the participant to bias of how they perceive stress and mindfulness.

Conclusion

Meditation-based mobile applications can be a useful and cost-effective way to reduce workplace related stress. Organizations can consider adding a meditation mobile application as a benefit for their employees use. There are many mobile applications available. Unlike Smiling Mind, most other applications charge a monthly fee which can be a barrier to accessing these applications. This project can easily be sustained because the mobile application used does not require a monthly payment from participants. Participants can decide whether meditation is a form of stress relief they find helpful to continue daily use.

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Tables

Table 1

Pre and post scores for PSS

Participant	Pre	Post
1	23	18
2	16	11
3	17	15
4	19	11
5	16	12
6	22	14
7	11	8
8	12	7
9	32	19
10	17	10
Total	18.7	11.9

Table 2

Pre and post scores for MAAS

Participant	Pre	Post
1	3	3.46
2	3.47	3.93
3	3.6	3.87
4	4.07	5.33
5	3.8	4.6
6	2.33	3.8
7	4.2	4.6
8	3.53	5.8
9	3.07	4.5
10	3.4	4.07
Total	3.55	4.4