

Modifiye Rehberli Farkındalık Temelli Meditasyon Uygulamasının Doktorların Stres Seviyeleri Ve Stresle Başa Çıkma Stratejileri Üzerine Etkisi, Randomize Kontrollü Çalışma

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Geliş Tarihi/Received: 17.03.2025

Kabul Tarihi/Accepted: 26.05.2025

e-Yayın/e-Printed: 02.07.2025

ÖZET

Farkındalık temelli stres azaltma girişimleri, stresi azaltma ve başa çıkma stratejileri üzerindeki faydaları nedeniyle ön plana çıkmıştır. Ancak, farkındalık temelli uygulamaların bazı eleştirilere açık olduğu görülmektedir. Yöntemlerin zorlu ve uzun çalışma saatleri ve yüksek maliyetleri nedeniyle hekimler uygulamalara tam olarak katılmakta, sürdürmekte ve uyum sağlamakta zorluk çekebilmektedirler. Ayrıca, odaklanmayı sürdürme ve grup çalışması sorumluluklarıyla ilişkili stres faktörleriyle başa çıkma zorlukları, istenen sonuçların alınmasını engelleyebilmektedir. Bu durum farkındalık temelli stres azaltma uygulamalarının genel faydalarını olumsuz yönde etkileme potansiyeline sahiptir. Bildirilen yüksek stres seviyeleri göz önüne alınarak , stres seviyelerini düşürme ve hekimlerde yapıcı stresle başa çıkma stratejilerini teşvik etme konusunda çözümlere önemle ihtiyaç vardır. Bu sorunu ele almak için mevcut yöntemleri ihtiyaca göre uyarlayarak uygulamak faydalı olabilir. Bu çalışmada, Dwindog uygulamasıyla sağlanan modifiye rehberli farkındalık temelli meditasyonun stres seviyelerini azaltma ve hekimlerin stresle başa çıkma stratejilerinde değişimi üzerindeki etkisi değerlendirilmiştir. Bu çalışma kör olmayan randomize kontrollü bir çalışmadır. Çalışmanın örneklemini 01.05.2023-30.06.2023 tarihlerinde halk sağlığı stajını alan intern doktorlardan oluşmaktadır. Deney grubu 22 intern doktordan oluşurken, kontrol grubu 33 intern doktordan oluşmuştur. Dwindog uygulamasıyla sağlanan modifiye rehberli farkındalık temelli meditasyon intern doktorlar tarafından uygulanmış ve intern doktorların stres düzeyleri ve stresle başa çıkma stratejilerini değerlendirmek için pre-post PSS ve WCI envanteri kullanılmıştır. Deney grubunun stres düzeyleri modifiye rehberli farkındalık temelli meditasyonla önemli ölçüde azalmıştır. ($p=0,001$). Modifiye rehberli farkındalık temelli meditasyonun intern doktorların stres düzeyleri üzerindeki etki büyüklüğü küçüktür. (Cohen $d=0,41$). Modifiye rehberli farkındalık meditasyonu uygulamasıyla, deney grubundaki katılımcılar stresle başa çıkmak için yapıcı yolları uygulamaya devam etmiş ($p=0,565$), kontrol grubundaki katılımcılar ise yıkıcı yolları uygulama davranışını önemli ölçüde artırmıştır ($p=0,06$). Dwindog uygulaması kullanılarak denenmiş, ekonomik, zaman esnekliği sağlayan, bireye özel farkındalık temelli meditasyona ulaşma fırsatları sunan, modifiye edilmiş rehberli farkındalık temelli meditasyon, intern doktorlarda stresi azaltmada etkili olduğu gibi, stresle başa çıkmada yapıcı stratejiler geliştirmeye de yardımcı olmuştur.

Anahtar Kelimeler: Modifiye rehberli farkındalık temelli meditasyon, stresle başa çıkma, stres yönetimi, farkındalık meditasyonu, farkındalık temelli stres azaltma

Effect Of Modified Guided Mindfulness Based Meditation Application On Stress Levels And Stress Coping Strategies Of Doctors , Randomised Controlled Trial

ABSTRACT

Mindfulness-based stress reduction initiatives have come to the fore as a result of their benefits on reducing stress and coping strategies. However, it is seen that mindfulness-based practices are open to some criticism. Due to the demanding and prolonged work hours and high costs of the methods that physicians may struggle to fully engage, sustain, and adapt to practices. Furthermore, challenges in maintaining focus and dealing with the stressors associated with group work responsibilities may hinder the desired outcomes. These unfavorable aspects have the potential to detrimentally impact the overall benefits of mindfulness based stress reduction practices. Based on the high levels of stress reported, there is an urgent need to reduce stress levels and promote strategies to cope with stress in physicians. it is necessary to modify and apply existing methods to promptly adress this issue. In this study the effect of the modified guided mindfulness based meditation provided by DOWNDOG application on reducing stress levels and change in stress coping strategies of physicians were evaluated. This study is non blind randomised controlled trial. The sample of the study consists of intern doctors who received their public health internship between 01.05.2023-30.06.2023. The experimental group consisted of 22 intern doctors while the control group consisted of 33 intern doctors. Modified guided mindfulness based meditation provided by DOWNDOG application was practiced by intern doctors and pre-post PSS and WCI inventory were used to evaluate stress levels and stress coping strategies of intern doctors. The stress levels of the experimental group decreased significantly with modified guided mindfulness based meditation ($p=0,001$). Effect size of modified guided mindfulness based meditation on stress levels of intern doctors was small (Cohen $d=0,41$). With the modified guided mindfulness meditation practice, the participants in the experimental group continued to apply constructive ways to cope with stress ($p = 0.565$), while the participants in the control group significantly increased the behavior of applying destructive ways ($p = 0.06$). Modified guided mindfulness based meditation provided by DOWNDOG application which offers economic, time flex , personalised opportunities to reach mindfulness based meditation is effective in reducing stress as well as help to remain constructive strategies of coping with stress in intern doctors.

Key Words: Modified guided mindfulness based meditation, stress reduction, stress coping , stress management, mindfulness meditation, mindfulness based stress reduction

INTRODUCTION

The prevalence of stress among physicians ranges from 40% to 91% in various studies (Stanetic, 2016; Kakemam, 2024; Maswad, 2024). During infectious disease pandemics like Covid-19, this prevalence can increase from 45% to 93.7% (Appiani, 2021; Garg, 2021; Salari, 2020). When transitioning from the final year of medical school to the first year of professional practice as interns, stress prevalence appears to be around 37% to 73%. These findings indicate consistently high stress levels among physicians, both at the beginning of their careers and in subsequent years. Moreover, there is a noticeable increase in the prevalence of stress, particularly in the later stages of their careers (Hannan, 2018; Abdulghani, 2014).

It's widely acknowledged that stress poses a serious threat to health, contributing to disorders in the mental, cardiovascular, gastrointestinal, and endocrine systems, as well as negatively affecting the immune system and increasing the likelihood of illness (Yaribeygi, 2017). Physicians, in particular, are more prone to mental health issues such as anxiety, depression, reduced mental functioning,

somatization, obsessive-compulsive and post-traumatic stress disorder, all of which can be linked to stress. Additionally, physicians often experience somehow stress related comorbidities such as hyperlipidemia, overweight and obesity, hypertension, fatty liver, hyperglycemia, chronic pain, and gastrointestinal issues (Chen, 2013; Vijendren, 2015). It should also be indicated that up to 87% of doctors experience burnout syndrome due to stress (Yang, 2024; Kumar, 2016; Shree, 2020).

As it is seen, combating stress in physicians is a very important issue that needs to be addressed and it is necessary to control stress levels. Fortunately there exist some approaches to managing intense stress levels in doctors. These approaches are primarily mindfulness-based practices, coping and solution-oriented methods and reflective methods (Locke, 2020).

Reflective group methods involve physicians gathering with a leader to discuss and exchange their experiences and associated emotions. The researches on reflective group-based interventions have shown insufficient evidence of stress reduction, and there is evidence indicating an increase in burnout syndrome caused by chronic stress rather than a decrease (Locke, 2020).

Approaches centered on coping and solutions are methods used to help individuals identify the sources of their stress, understand how they manage it, and work towards exchanging maladaptive coping strategies for adaptive ones. These approaches concentrate on enhancing coping mechanisms for stress rather than solely aiming to decrease stress levels. Most of these techniques were developed through extensive in-person interviews with experts over many years. The evidence on the effectiveness of these approaches in reducing stress is not yet comprehensive but their impact on coping strategies over short periods are need to be demonstrated (Locke, 2020; Clough, 2017).

Practicing mindfulness entails being fully engaged in the present moment and acknowledging one's thoughts without any judgment. The mindfulness based stress reduction program, developed by Zinn-Kabatt and presented to the literature, is a 12-month program consisting of practice and homework for a few days each week. While researches demonstrate the effectiveness of mindfulness-based approaches in stress management when compared to other methods, there are also instances where certain studies have shown unsuccessful outcomes pertaining to mindfulness-based stress reduction (Locke, 2020; Kabat-Zinn, 2023).

As each stress reduction methods are assessed, it becomes evident that they yield varying effects on reducing stress among doctors. Each method presents distinct advantages and disadvantages.

Recently, mindfulness-based stress reduction initiatives have come to the fore as a result of their benefits. However, it is seen that mindfulness-based practices are open to some criticism.

It is seen that mindfulness-based practices are challenging in terms of time and space for both those who are facilitators and participants (Valluri, 2024; Querstret, 2020). This is due to the extensive nature of mindfulness practices, involving assignments and activities that span over a lengthy period, such as 12 months, and sometimes requiring several hours on certain days (Kabat-Zinn, 2023). Physician face challenges due to long and demanding work hours, which can hinder their participation in mindfulness practices and impact their ability to maintain consistent focus. Research has shown that mindfulness-based stress reduction programs involve group participation with a trainer or trainer group, along with assigned applications and homework. Nevertheless, physicians

may contend with extra stressors, such as steep participation expenses, the burden of group responsibility, and the challenge of fitting these practices into their schedule. (Goldberg, 2020). Physician experiencing prolonged and strenuous work periods require stress-relief methods that are readily available, adaptable to their busy schedules, and affordable. These techniques should cater to individual or group sessions, be accessible during and outside working hours, offering convenience and flexibility for the physicians. Moreover, in mindfulness-based approaches, it is crucial to direct attention to the present moment and oneself, to observe the thoughts, and their flow, and observe them without judgment. It can be difficult for individuals to remain in the present moment, but it also requires awareness to recognize when focus shifts and to refocus on the present moment. This can be particularly challenging for individuals experiencing high levels of stress, such as physicians. Inadequate stress reduction in mindfulness-based techniques can sometimes be attributed to these factors (Goldberg, 2020). In order to achieve more successful results with mindfulness-based practices in people with high stress levels, such as doctors, some aspects of traditional mindfullnesses may need to be modified (Schroder, 2018; Truhlar, 2022; Bu, 2019). Furthermore, even though there are various studies on the reduction of stress levels with mindfulness-based practices with different outcomes, studies on the impact of mindfulness based practices on enhancing stress coping strategies are severely lacking. It is crucial to further explore the effect of mindfulness-based practices, widely believed to be beneficial for managing stress, on stress coping strategies, too.

RATIONALE OF THE STUDY

It is evident that there is a lack of adequate data of present stress reducing methods concerning promotion of the strategies physicians use to cope with stress, as well as there exist unfavourable aspects of these methods for engagement to reduce stress levels. Due to the demanding and prolonged work hours and high costs of the methods that physicians may struggle to fully engage, sustain, and adapt to practices. Furthermore, challenges in maintaining focus and dealing with the stressors associated with group work responsibilities may hinder the desired outcomes. These unfavorable aspects have the potential to detrimentally impact the overall benefits of stress reduction methods. Based on the high levels of stress reported, there is an urgent need to reduce stress levels and promote strategies to cope with stress in physicians. it is necessary to modify and apply existing methods to promptly adress this issue.

Hypothesis 1: Downdog application which provides modified guided mindfullness based meditation does not reduce stress levels in physicians

Hypothesis 2: Downdog application which provides modified guided mindfullness based meditation does not enhance stress coping strategies of physicians.

The Downdog application provides modified guided mindfullness based meditation to help physician to focus more easily, to maintain focus for longer, to recognize distraction and to help regain focus, and to be modified in a personal way to allow to be benefitted for the desired time and repetition wherever it is needed. It presents a range of meditation topics and provides tailored, guided, personalized mindfullness meditation sessions designed to address their specific needs. Moreover this application has been dowloaded by more than 5 million people around the world,

which does not create an economic burden for university employees, physicians, students, and people with insufficient income so that it is open to everyone to benefit without economic burden.

In this study, the effect of the modified guided mindfulness based meditation provided by Dondog application on reducing stress levels and change in stress coping strategies of physicians were evaluated.

METHOD

This research was approved by Zonguldak Bülent Ecevit University Human Research Ethic Comitee with protocol number: 375 in the date of 12.04.2023.

This research was carried out on humans in accordance with the principles of the Declaration of Helsinki.

Participants were informed before the study and the volunteers were made to fill in a voluntary participation form.

This study was conducted at Zonguldak Bülent Ecevit University Medical Faculty between 01.05.2023 ve 30.01.2024.

These study is non blind randomised controlled trial. The sample of the study consists of intern doctors who received their public health internship between 01.05.2023-30.06.2023. The experimental group consisted of 22 intern doctors while the control group consisted of 33 intern doctors.

Participants completed an online questionnaire to determine their stress levels and their stress coping strategies . The questionnaire included 9 questions about sociodemographic characteristics, a 14-question perceived stress scale and a 30-question ways of coping inventory.

The perceived stress scale (PSS) was developed by Cohen et al. (Cohen, 1983). The validity and reliability study of the scale in Turkey was conducted by Baltaş et al. (Baltaş, 1998). PSS consists of a total of 14 items that evaluate stress levels . Each item of the scale is a 5-point Likert-type ranging from never (0) to very often (4) . A score between 11-26 indicates a low stress level, a score between 27-41 indicates a medium stress level, and a score between 42-56 indicates a high stress level.

In order to evaluate the coping strategies with stress, the "Ways of Coping Inventory (WCI)" developed by Folkman and Lazarus and adapted for university students by Şahin and Durak in Turkey was used. This scale consists of total of 30 items that evaluate coping strategies with stress . Each item of the scale is a 4-point Likert-type ranging from not at all appropriate (0) to completely appropriate (4). This scale has 5 subgroups of coping strategies with stress: optimistic approach, self-confident approach, desperate approach, submissive approach, and consulting for social support . According to this scale, the person's method of coping with stress is determined as the subgroup with the highest score. While Optimistic approach, self-confident approach and applying for social support are accepted as constructive ways of coping with stress , desperate approach and submissive approach are destructive ones (Folkman, 1985; Sahin, 1995).

Modified guided mindfulness based meditation practice was applied by using downdog application to the experimental group everyday for 5 weeks with each doctor’s desired topics, desired duration, desired position (sitting or lying position), closed eyes, in dark or light environment, in their home or/and their working area .

At the end of the 5th week, the questionnaire consisting of PSS and WCI was reapplied to the experimental and control group participants. During the study period, there were no participants who left the study and the study was ended with a total of 55 intern doctors.

The results of the questionnaires were evaluated to determine the effect of modified guided mindfulness meditation provided by Downdog application on stress level and coping strategies with stress.

Statical analysis

In the evaluation of the results, statistical analyzes were made using the IBM SPSS 2019 package program.

After it was shown that the variables fit the normal distribution according to Shapirowilk PP, QQ graphics, skewness and curtosis values, Repeated measures test , ANOVA for continous variables and chi-square for categorical variables were used to evaluate.

RESULTS

Table 1. Sociodemographic characteristics of experimental and control groups

Sociodemographic characteristics	Experiment		Control		Total		P
	%	n	%	n	%	n	
Female	63,6	14	69,7	23	67,3	37	0, 63
Male	36,4	8	30,3	10	32,7	18	
≤ 24 years	45,5	10	45,5	15	45,5	25	1,00
>24 years	54,5	12	54,5	18	54,5	30	

Sociodemographic characteristics of experimental and control groups are given in table 1.

Of all participants, 67.3% (37) were female and 32.7% (18) were male. While 63,6% (14) of the experimental group were female and 36,4% (8) were male , 69,7% (23) of the control group were female and 30,3% (10) were male. There was no significant difference between the experimental and control groups according to gender.

In total, 45.5% (25) of the participants were 24 years of age or younger and 54.5% (30) of them were over 24 years old. While 45.5% (10) of the experimental group and 45.5% (15) of the control group were 24 years of age or younger, 54.5% (12) of the experimental group and 54.5% (18) of the control group were over 24 years of age. There was no significant difference according to age in the experimental and control groups. Mean age of the all participants were 24,84±1,08.

As it is seen there was not significant difference between experimental and control groups according to sociodemographic characteristics.

Table 2. Comparison of stress levels of participants before and after modified guided mindfulness based meditation provided by Downdog application

Group	Modified guided mindfulness based meditation	Mean±Std	P	Cohen d
Experiment	Before	27,7±7,40	0,001	0,41
	After	21,5±5,76		
Control	Before	27,6±7,23	0,964	
	After	27,6±6,85		

Comparison of stress levels of participants before and after modified guided mindfulness based meditation by Downdog application is given in table 2.

While the mean stress level of experimental group before modified guided mindfulness based meditation was 27.72±7.40, it was 21.50±5.76 after.

The stress levels of the experimental group decreased significantly with modified guided mindfulness based meditation (p=0,001).

While the mean stress level of the control group was 27.63±7.23 in first survey , it was 27.60±6.85 in the second one .

There was no significant change in stress levels in the control group (p=0,964).

Modified guided mindfulness based meditation significantly reduced the stress levels in intern doctors.

Effect size of modified guided mindfulness based meditation on stress levels of intern doctors was small (Cohen d=0,41).

Table 3. Change of coping strategies with stress in experimental and control groups before and after modified guided mindfulness based meditation by Dwndog application

Modified guided mindfulness based meditation	Group	The type of coping strategies with stress				P
		Constructive ways of coping		Destructive ways of coping		
		N	%	N	%	
Before	Experiment	11	50,0	11	50,0	0,565
	Control	16	48,5	17	51,5	
After	Experiment	16	72,7	6	27,3	0,006
	Control	17	51,5	16	48,5	

Change of coping strategies with stress in experimental and control groups before and after modified guided mindfulness based meditation is given in table 3.

While half (%50) of the the experimental group practiced constructive ways of coping with stress (optimistic approach, self-confident approach, consulting for social support) and another half (%50) practiced destructive ways (desperate approach, submissive approach) before modified guided mindfulness based meditation , 48,5 % of the control group practiced constructive ways and 51,5 % practiced destructive ways . There were no significant difference in strategies to cope with stress in experiment and control groups before modified guided mindfulness based meditation. (p=0,565)

While 72,7% of the experimental group practiced constructive ways of coping with stress (optimistic approach, self-confidence, social support) and 27,3% practiced destructive ways of coping with stress (helpless approach, submissive approach) after modified guided mindfulness based meditation , 51,5 % of the control group practiced constructive ways of coping with stress and 48,5% practiced destructive ways of coping with stress. There were significantly less intern doctors using destructive ways of stress coping after modified guided mindfulness based meditation. (p=0,006)

Modified guided mindfulness based meditation helped doctors to use of constructive ways of coping with stress.

DISCUSSION

In previous many RCTs of mindfulness based stress reduction practice it is seen that modified and electronic delivered mindfulness based meditation show the largest effect on reducing stress levels , especially in healthcare providers (Spinelli, 2019).

In this study modified guided mindfulness based meditation provided by Downdog application significantly reduced the stress levels of intern doctors, too and show consistency with previous studies' results. It may mean that not only mindfulness based meditation but also modified guided one provided by electronic application can be advised for especially the ones such as physicians who have high stress burden, lack of opportunity to spare time with practices whose effects appear after long period of performances . In this study downdog application was used to practice modified guided mindfulness meditation for stress reduction and economic cost of this application is very low for most ones and it is free for especially physicians, healthcare workers and the medical students. It may also mean that not consulting for only expensive professional courses or organisations providing mindfulness based stress reduction , also cheaper and modified guided applications can be beneficial for stress reduction. Modified guided meditation provided by downdog application reduced the stress levels of the the population of this study composing of the intern doctors who transite from medical education to their profession . It also show that modified , guided mindfulness practices provided by basic economic applications can be better to integrate to their curriculum during medical education to support intern doctors, medical students to control their stress levels. To be aware of how to control and enhance constructive strategies to cope with stress from medical students and intern doctors' today will surely support their future professional life as physicians.

In the current literature it is seen that the ones regularly practicing mindfulness based meditation apply problem solving strategies to cope with stress rather than emotional focused strategies (Charoensukmongkol, 2013).

Problem solving strategies (planning, demanding information, discussion, and effort to reduce the intensity of stressor) are more effective and desired ways to cope with stress than emotional focused strategies (distancing, isolation, wishful thinking, denial, withdrawal, or escapism) due to the literature showing problem solving strategies decrease stress, depression, anxiety while emotional focused strategies increase (Anshel, 2009; Penley, 2002).

In this study the intern doctors who practice modified guided mindfulness based meditation provided by Downdog application increase constructive ways of coping and show consistent results with current literature about the effect of mindfulness based meditation.

It can be said that in aspect of prevention from developing destructive ways of stress coping, modified guided mindfulness based meditation provided by downdog application played role but it is important to add that It is open to further evaluation if and how modified guided meditation and also mindfulness meditation enhance or support constructive ways of stress coping strategies in medical students, intern doctors, physician as well as general population.

CONCLUSION

Modified guided mindfulness based meditation provided by Downtog application which offers economic, time flex , personalised opportunities to reach mindfulness based meditation is effective in reducing stress as well as help to increase constructive strategies of coping with stress in intern doctors.

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