

Impact of the heartfulness program on stress and sleep among healthcare professionals: Pre experimental study

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ABSTRACT

Background: Healthcare professionals (HCPs) worldwide suffer from stress and poor sleep and the COVID-19 pandemic has further raised these issues. This study sought to determine whether HCPs had reduced stress and increased sleep quality while participating in a heartfulness meditation program. **Subjects and Methods:** For a 2-month (8 weeks) heartfulness meditation program, we included 41 individuals in a prospective one-group pretest post-test intervention design from February 2023 to April 2023. Scores on the Perceived Stress Scale and Pittsburgh Sleep Quality Index were gathered at baseline and 8 weeks. Forty-one (76%) of the 54 participants completed this study for 8 weeks. **Results:** Results showed a substantial decline in stress (preintervention mean \pm standard deviation [SD] = 20.54 \pm 4.46; postintervention mean \pm SD = 18.42 \pm 6.14; t-value = -1.947 [0.05*]) and improvement in sleep quality (preintervention mean \pm SD = 6.63 \pm 3.82; postintervention mean \pm SD = 5.29 \pm 2.44) among HCPs after following this 8-week heartfulness meditation program. In the end, a substantial decrease in perceived stress score and an improvement in the sleep quality index was found. **Conclusion:** Additionally, practicing heartfulness meditation may aid in developing the traits of empathy, acceptance, and inner serenity. We draw the conclusion that more extensive research is required to fully understand the impact of heartfulness meditation practice.

Keywords: HCPs, heartfulness meditation program, sleep, stress

Introduction

Maintaining the internal milieu of every human being in the face of an altering environment is crucial to maintaining homeostasis in our lives. Stress is the result of anything that poses a significant threat to our homeostasis. Stressors are actual or imagined dangers to an organism's homeostasis, which further leads to stress response in an individual's life.^[1] When demands exceed the amount of personal and social resources in an individual

life, they experience stress which is a condition or feeling. It is also summarized as a mismatch between one's internal resources and external demands. Both these factors affect bodily reactions and cause stress. Stress is a major contributing factor to health issues like hypertension, cardiovascular disease, obesity, diabetes, mental health disorders, immunological dysfunction, and sleeping disturbances.^[2]

Sleep is the most crucial aspect in determining stress level and general health; comparable to stress, insufficient sleep can have negative effects on one's physical and mental wellbeing.^[3] Therefore, despite modern lives, luxuries, and technical advancements among healthcare professionals (HCPs), stress and a lack of sufficient sleep are still regarded as important

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public health concerns.^[4] This pre-existing stress issue has been brought to light by the COVID-19 pandemic since it has become much worse among HCPs.^[5,6] The Center for Disease Control and Prevention has suggested several methods for reducing stress including eating a healthy diet, maintaining healthy sleeping habits, exercising, unwinding, and meditation.^[7]

There are many other types of meditation, but this study focuses on mindfulness meditation, a straightforward heart-based technique that aims to achieve a calm state of mind.^[8] The practice includes a morning session emphasizing relaxation and meditation, an evening session for rejuvenation that entails clearing away the day's emotional impressions, and a night-time session for a closer connection with oneself that includes a brief meditation session before bed.^[5] Additionally, sessions led by trainers are available. Research evidence showed that mindfulness meditation practices reduce psychological stress and improve overall wellbeing.^[6,9] A cross-sectional study conducted in US adults who practiced mindfulness meditation had higher levels of physical activity.^[7] There is a dearth of qualitative research on the effects of practicing mindfulness meditation on individuals' experiences and perceived alterations in their general outlook on life and welfare. The main aim of this pre-experimental research study was to assess the effect of a mindfulness meditation program on stress and sleep among HCPs.

Subjects and Methods

Study setting: The present study was conducted at All India Institute of Medical Sciences, Deoghar, Jharkhand.

Study design: This study was a pre-experimental study using one-group pretest post-test design in which preassessment was conducted at baseline and after 8 weeks of a mindfulness meditation program with regular follow-up sessions.

Study participants: A total of 41 participants were enrolled and completed 8 weeks of follow-up sessions using a purposive sampling technique to follow the mindfulness meditation program. The inclusion criteria for this study were HCPs who were healthy and oriented to smart-phone application and technology. Exclusion criteria for this study were HCPs who were not willing to participate and had psychiatric or psychological issues or who were taking psychiatric medicine.

Data collection: Mindfulness meditation intervention included orientation and education sessions. Before beginning this study, the principal investigator conducted an orientation session for 3 days for study participants. On Day 1, participants were trained for mindfulness meditation and relaxation, on Day 2 participants were trained for cleaning techniques and meditation, and on Day 3 they were trained for prayers and meditation. Each participant received briefing and sessions by trained meditation experts whom they could contact in case they had any query related to mindfulness meditation. During the study period, the primary investigator conducted follow-up sessions once a week by online

mode for 8 weeks. Second, a mindfulness meditation intervention was conducted by the trainer. It was advised that participants must attend three live sessions with a trainer, followed by weekly sessions for 2 months. One session consisted of 5-7 minutes of relaxation followed by 20 minutes of meditation.

Step-1: In mindfulness meditation sessions, meditation and relaxation sessions lasted for 20 minutes after 5 minutes of relaxation preferably in the morning. **Step-II:** In this step, mindfulness rejuvenation was advised for 15 minutes during night-time, in which rejuvenation ritual imaging was followed to reduce tension by evaporation of tension through the back of the body. A flow of purity, lightness, and freshness helped to relieve stress. **Step-III:** In this step, bedtime prayer before going to bed was done by participants for a few minutes to pray and reflect on the day's events for introspection and meditate for 5 minutes.

Statistical analysis

After selection of 41 participants, they were recruited for 8-week mindfulness meditation program with 50 minutes' session for 3 consecutive days, followed by weekly follow-ups till 8 weeks. Each participant's daily activity included mindfulness meditation and relaxation session, mindfulness rejuvenation and bedtime prayer meditation which guided relax, meditate, affirm, breathe, rejuvenate, and self-observe. Weekly session was delivered by trained mentors to each participant. Stress outcome of study participants was assessed by using the Perceived Stress Scale (PSS)^[10] and their quality of sleep was assessed by using the Pittsburgh Sleep Quality Index (PSQI) scale and both stress and quality of sleep were compared by paired *t*-test at 0.05 level of significance.^[11]

Ethical considerations

Ethical approval was obtained from Institute Ethical Committee (AIIMS-DEO/RC-IEC-Full committee/2023-Jan/33 on dated 30.1.2022). Each study participant provided their written informed consent. Throughout the whole study, each participant's anonymity and confidentiality were upheld. The study was carried out in accordance with the Declaration of Helsinki's ethical principles as well as other regulations set forth by the Indian Council of Medical Research and good clinical practice recommendations.^[12]

Results

Of 54 participants, only 41 (76%) participants in the study finished the 8-week mindfulness meditation program and study showed 24% attrition rate [Figure 1].

Biodemographic variables

Mean age of participants was 32.48 years. Most of HCPs who were included in this study were female (63%), belonged to clinical departments (71%), and followed Hindu religion (100%). Majority were baccalaureate-level (54%) educated, nursing officers (34%), and residing in urban area (51%). Most of HCPs

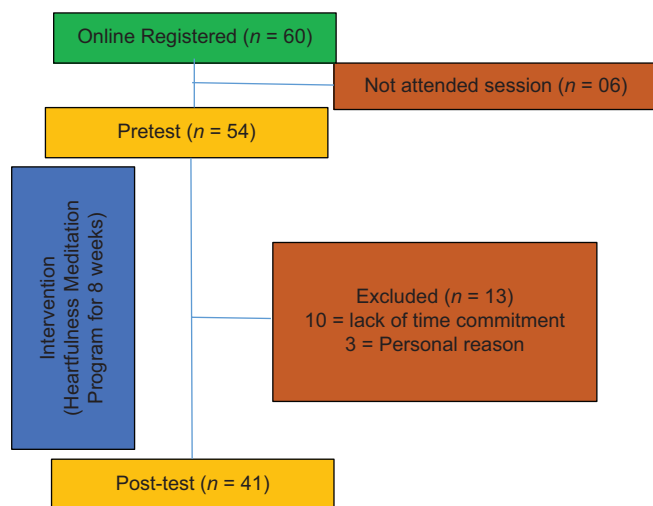


Figure 1: Flow diagram for the study

had less than five members (80%) in their family and were travelling around 50 km/day (70%) to reach their workplace. Majority were having more than 5 years of experience (46%) of professional life [Table 1].

Clinical variables of participants

The majority of participants were not suffering from any chronic illness (90%) and were having more than 6 hours of sleep/day (63%). Most of HCPs were using their smartphone for 2 to 4 hours (48%)/day and spending 30 to 60 minutes/day following their hobbies [Table 2].

Perceived stress scale levels and effect of heartful meditation on stress

Before the heartfulness meditation program, HCPs showed moderate levels (83%) of stress on PSS scores. Heartfulness meditation intervention showed a significant reduction (0.05*) in HCPs PSS score at 0.05 level, which indicates that heartfulness meditation is a very good intervention to reduce stress levels [Table 3].

Effect of heartful meditation on sleep

Heartfulness meditation intervention showed a reduction (before = 6.63; after = 5.29) in Pittsburgh sleep quality index scale scores, which indicates it was a very good intervention to improve sleep quality [Table 4].

Discussion

The two most important risk factors for developing long-term physical and mental health issues that affect HCPs' health are stress and poor sleep. Various research shows that stress-related illnesses such as mental health issues, substance addiction, suicide, sleep disorders, and cardiovascular disease are linked to catastrophes or public health emergencies.^[13]

Forty-one of 54 HCPs enrolled in the study completed all steps of the program, representing an attrition rate of 24%.

Table 1: Biodemographic variables of participants (n=41)

Variables	Options	Frequency	Percentage
Age (years)	Mean±SD	32.48±8.73	
	<30 years	20	49
	>30 years	21	51
Gender	Male	15	37
	Female	26	63
Department	Clinical Department	29	71
	Nursing	12	29
Religion	Hindu	41	100
Education	Baccalaureate degree	22	54
	Master degree	16	39
	PhD degree	03	07
Occupation	Doctor	12	29
	Nursing Faculty	09	22
	Nursing Officer	14	34
	Health care worker	06	15
Residence	Rural Area	06	15
	Urban Area	21	51
	Semi-Urban Area	14	34
Number of family members/family	<5	33	80
	>5	08	20
Living how far from hospital	0-10 km	11	27
	10-50 km	29	70
	<50 km	01	03
Years of professional experience	>1 year	11	27
	1-5 years	11	27
	>5 years	19	46

Table 2: Clinical variables of participants

Variables	Options	Frequency	Percentage
History of any chronic illness	No any disease	37	90
	Sinusitis	02	04
	PCOS	01	03
	Diabetes + HTN	01	03
Number of hours taking sleep	<6 h	15	37
	>6 h	26	63
Number of hours using smart phone	<2 h	10	25
	2-4 h	20	48
	>4 h	11	27
Minutes per day doing any hobbies activity	<30 min	12	30
	30-60 min	17	40
	60-120 min	12	30

PCOS, Polycystic ovary syndrome; HTN, Hypertension

Most participants left the program after the first 2 weeks, 10 participants cited lack of time/commitment as the reason for not continuing the heartfulness meditation and three participants said that they had uncitable personal reasons for discontinuing this meditation program.

The COVID-19 pandemic has altered almost every facet of modern life and put the whole world's population in an unimaginably precarious situation which was linked to a greater level of stress, anxiety, and depression among the general public and HCPs.^[6,14] This study also emphasizes the impact of stress and poor sleep during the COVID-19 pandemic on HCPs.^[15]

Table 3: Perceived stress scale (PSS) levels of HCPs and effect of mindful meditation on stress level

Variables	Options	Frequency	Percentage
Perceived Stress Scale (PSS) Scores Before Intervention	Low stress (0-13)	05	13
	Moderate stress (14-26)	34	83
	High perceived stress (27-40)	02	04
Variables	Options	Mean±SD	Paired t-test (P)
Perceived Stress Scale (PSS) Scores	Preintervention	20.54±4.46	-1.947 (.05*)
	Post-intervention	18.42±6.14	

*Significant at 0.05 level

Table 4: Effect of mindful meditation on Pittsburgh sleep quality index (PSQI) scale scores of HCPs

Variables	Options	Mean	SD	Paired t-test (P)
Pittsburgh Sleep Quality Index (PSQI) Global Scale Scores (Score=0 to 21)	Preintervention	6.63	3.82	-1.832 (.07) ^{NS}
	Postintervention	5.29	2.44	

^{NS}Non-significant at 0.05 level

People's health and wellbeing may be negatively impacted by a public health crisis for both short-term and long-term periods. Our study evaluated the effects of mindfulness meditation practice on stress and sleep using a pre-experimental study.

However, it is possible that participating in a virtual environment in follow-up sessions would be more difficult than in-person sessions because meditation programs are often performed in in-person settings. However, a similar study using PSS and PSQI measurements was used to assess the effects of mindfulness training to lessen stress, and it was discovered that virtual mindfulness training viz a viz in-person mindfulness training was equally effective.

Our study also found proof that meditation enhanced the quality of sleep. Similarly, an audio relaxation program led by a mindfulness trainer during a brief virtual mindfulness meditation program significantly reduced clinicians' and nursing officers' stress and improved sleep quality.^[7] According to our study, participants considerably improved on the PSS and PSQI after practicing mindfulness meditation. About 90% of participants completed the mindfulness meditation program during follow-ups and it was entirely online. Based on these findings, we suggested that a virtual platform-based meditation program can provide a practical, beneficial, and easily available tool to a broad population at once to aid in improving people's psychological wellbeing.

This present study contributes to the body of research by demonstrating the advantages of practicing mindfulness meditation as indicated by some other studies showing the benefits of mindfulness relaxation and meditation to reduce stress, burnout, and loneliness as well as to enhance sleep quality.^[16,17] The mindfulness meditation's effectiveness are not well understood and outcomes of various quantitative analyses have shed new light on this issue and therefore advance our knowledge of mindfulness meditation practice's effect to lower

stress and boosts sleep quality. Interestingly, considerable improvements in stress levels and sleep quality were found throughout the course of our trial. Every group meditation session began with a guided relaxation, which helped participants practice meditation more successfully while also lowering stress and anxiety. The parasympathetic route in the brain is probably activated by guided relaxation, which aids in establishing a relaxed state of mind before meditation.

As primary care physician, we must recommend mindfulness meditation to our patients to strengthen their immune system, to reduce their stress level, and to enhance their quality of sleep. It also contributes to improving life quality in a variety of ways for every patient.

Limitations

There were a few restrictions on this study. The sample size was not large enough and due to the lack of a control group and the fact that study participants were self-motivated to adopt the mindfulness meditation according to the pretest–post-test only design, there may have been selection bias. Another, utilization of personal reporting of one's self-practice of various meditation techniques and variations in individual adherence may be another apparent constraint. To reliably assess compliance with the main requirement of the program, we tracked attendance at virtual group meditation sessions led by the mindfulness trainer. Furthermore, results in survey studies relying on human memory may be vague. Future research must examine long-term data on the persistent enhancement in sleep quality and decrease in stress.

Conclusion

Mindfulness meditation practices are useful resources to reduce stress and improve sleep. Besides HCPs, it might be possible to adopt such a practice into ordinary people's existing lifestyles. In our study, participants who engaged in a mindfulness meditation program showed a statistically significant increase in perceived stress score and sleep quality index. The practice of mindfulness may also make it possible for people to develop qualities like empathy, acceptance, and inner serenity. Promoting better lifestyles can be a crucial preventive measure to fight any future health issues related to psychological stress, including the practice of meditation. It is necessary to conduct more extensive research on the impacts of practically accessible mindfulness meditation practice.

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Conflicts of interest

All authors declare no potential conflicts of interest.

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