

# Mindfulness Meditation Combined with Digital Health for Medical Personnel at a Korean Medicine Hospital in South Korea: A Case Series

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**Objectives:** Medical personnel are professionals subject to stressful situations and psychological distress. This case series reports the results of a mindfulness meditation program combined with digital health for medical personnel at a Korean medicine (KM) hospital.

**Methods:** An online mindfulness program was implemented in 2022 to improve the mental health of nursing staff in a KM clinic. The online mindfulness program, which was supplemented based on previous results and limitations, was applied to KM doctors and nurses working at a KM hospital in this case series. An important difference from the existing case series was the introduction of a smartphone application that promoted the daily routine of meditation. A total of 7 medical personnel, including 4 doctors and 3 nurses, participated in the program.

**Results:** After participating in the program, an increase in deep acting and a decrease in surface acting, which are aspects of emotional labor, were consistent with the results of a previous case series. However, the patterns of change in burnout and hwa-byung symptoms differed depending on the occupation of the participants. Participants' satisfaction with this program and the smartphone application and willingness to recommend it to colleagues were high.

**Conclusions:** As this study was only a small case series, the author plans to continue to expand and improve the program based on the findings.

**Key Words:** Mindfulness, Nursing staff, Korean medicine, Emotional labor, Burnout.

## I. INTRODUCTION

Medical personnel are one of the professions subject to the most stressful situations and psychological distress<sup>1</sup>. The COVID-19 pandemic has also posed a mental health threat to this population<sup>2</sup>. In Korea, there is a dual medical system consisting of conventional Western medicine (WM) and Korean medicine (KM)<sup>3</sup>, and each type of medicine can be related to the mental health of its medical personnel. For example, our meta-analysis found that nurses working in KM hospitals had lower job satisfaction than nurses working in WM hospitals in Korea, potentially affecting their mental health<sup>4</sup>.

Mind-body medicine is considered an effective adjunct therapy that helps manage stress and stress-related disorders, particularly by promoting resilience through self-management<sup>5</sup>. Representative examples of the use of mind-body medicine in the management of stress include mindfulness-based stress reduction (MBSR) program, which has been reported to be effective in reducing stress, depression, and anxiety, and enhancing mindfulness in healthcare professionals<sup>6</sup>.

In this context, we implemented an online mindfulness program in 2022, reflecting the work characteristics of Korean nurses who are vulnerable to emotional labor<sup>7</sup>, and reported the results<sup>8</sup>. However, the program still needed further improvement, especially the promotion of self-management. Accordingly, our team developed a smartphone application and used it in conjunction with the online mindfulness program for medical personnel in a KM hospital. In particular, in this case series, not only nurses working at the KM hospital but also KM doctors (KMDs) were included, so the scope of subjects was expanded. To the best of our knowledge, this study is the first case series of the application of mindfulness meditation combined with digital health

to medical personnel at a KM hospital.

## II. MATERIALS AND METHODS

This case series complied with the 2013 CARE guideline<sup>9</sup>. This program was implemented as part of the small business support program of the university in Busan, South Korea. The target is a KM hospital located in the city, with more than 100 beds. Among the medical personnel working at this hospital, the program was promoted to KMDs and nurses in the outpatient department. The reason for excluding nurses in the inpatient department was that it was judged difficult to participate in the program consistently due to their shift work. Pre- and post-evaluation was not mandatory for them, and they were informed that they could withdraw from the program at any time if they wished. All participants agreed to the use of their personal information for research purposes and participated in the assessment, and the data was collected online and anonymized. Using a free online survey platform (Moaform, <http://www.moaform.com>), pre- and post-assessments were conducted and fully informed consent was obtained from the participants. In order to encourage the participants' enthusiastic participation, it was announced before the start of the program that if they participated in more than 4 of the 5 sessions, they would receive compensation worth about \$3. Four KMDs and three nurses volunteered for the program, all of whom completed the program (Table 1). Five undergraduate students from a KM university participated as observers, but they did not participate in the assessment.

We adopted and improved the program used in our previous case series<sup>8</sup>. That is, as previously described, the program consisted of mindfulness training with an emphasis on compassion and loving-kindness sessions (Table 2). Our previous study ob-

**Table 1.** The Basic Information of the Participants

Variables	Options	KMD (n=4)	Nurses (n=3)
Age	<30	3	0
	30~39	1	0
	40~49	0	0
	50<	0	3
Sex	Male	2	0
	Female	2	3
Clinical experience	Mean (range)	41.25 months (5 to 126)	329 months (153 to 444)
Experience using Zoom software	Yes	4	0
	No	0	4
Experience participating in a meditation program	Yes	1	0
	No	3	4
N of sessions attended	3	1	0
	4	2	2
	5	1	1

KMD: Korean medicine doctor.

**Table 2.** Online Mindfulness Program for the Participants

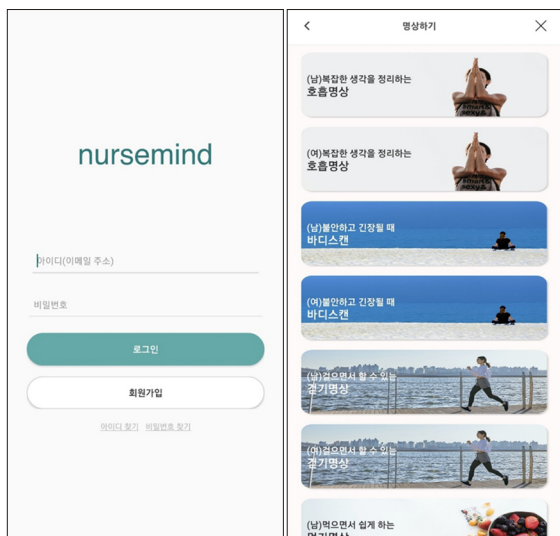
Session	Topic	Lessons
1 (W1)	Introduction to mindfulness	- Concept of mindfulness - Mindful eating and body scanning
2 (W3)	Advanced mindfulness	- The practice of mindfulness - Sitting meditation and mindfulness yoga
3 (W5)	Compassion	- Concept of compassion - Loving-kindness meditation
4 (W7)	Self-care	- Concept of compassion fatigue - Practice of self-care
5 (W9)	Work, love, and mindfulness	- Applying mindfulness in everyday life - Create individual action plans of mindfulness

served changes in emotional labor and burnout among nursing staffs in a KM clinic who participated in this program<sup>8</sup>). The mindfulness program used in the current case series was identical in content, format, and implementation to the past one (i.e., bi-weekly, 8~10 p.m., and Zoom meetings). In addition, the practitioner of this program was the same certified professionals as the previous case series<sup>8</sup>), who had a doctorate in psychology and had experience in running a number of mindfulness meditation training programs for working professionals.

One of the main limitations of the introduction of this program in the previous case series<sup>8</sup>) was the difficulty of promoting mindfulness training in daily life. In general, mindfulness programs promote mindful-

ness training in daily life by assigning homework<sup>10</sup>). Since the current program was implemented once every two weeks, there was a need to reinforce elements to promote training in daily life between sessions. Accordingly, we developed a smartphone application so that participants could practice mindfulness in their daily lives (Fig. 1). This smartphone application was installed on every participant's cell phone on the first day of the program, and the practitioner encouraged the participants' use of the application when assigning homework for mindfulness training.

In the participants, pre- and post-mortem evaluations included: subjective health status (1, worst to 5, best); knowledge and attitude toward mind-body



**Fig. 1.** Smartphone application that participants were encouraged to use. Note. The participants can choose any type of content and practice mindfulness for 10~20 minutes whenever they want. This application provides the following types of contents in male and female versions: breathing meditation, body scan, walking meditation, eating meditation, loving-kindness meditation, forgiveness meditation, progressive muscle relaxation, autogenic training, and five meditative music tracks.

medicine (1 to 5 point Likert scale); the emotional labor assessment tool by Lee<sup>11</sup>; the Copenhagen Burnout Inventory (Korean version)<sup>12</sup>; Hwa-byung scale<sup>13</sup>; and satisfaction and dissatisfaction with participation in this program. The collected information was downloaded in xlsx format from the online survey platform. Statistical analysis and visualization were performed using Microsoft Excel software (Microsoft, Redmond, WA, USA).

### III. CASE PRESENTATIONS

Overall, the participants reported better subjective health after participating in the program (from 3.00 to 3.57). Additionally, knowledge about mind-body medicine increased (from 2.71 to 3.14), and positive views that smartphone applications including mind-body medicine are helpful in improving mental health were strengthened (from 4.14 to 4.71). The increase in knowledge about mind-body medicine was

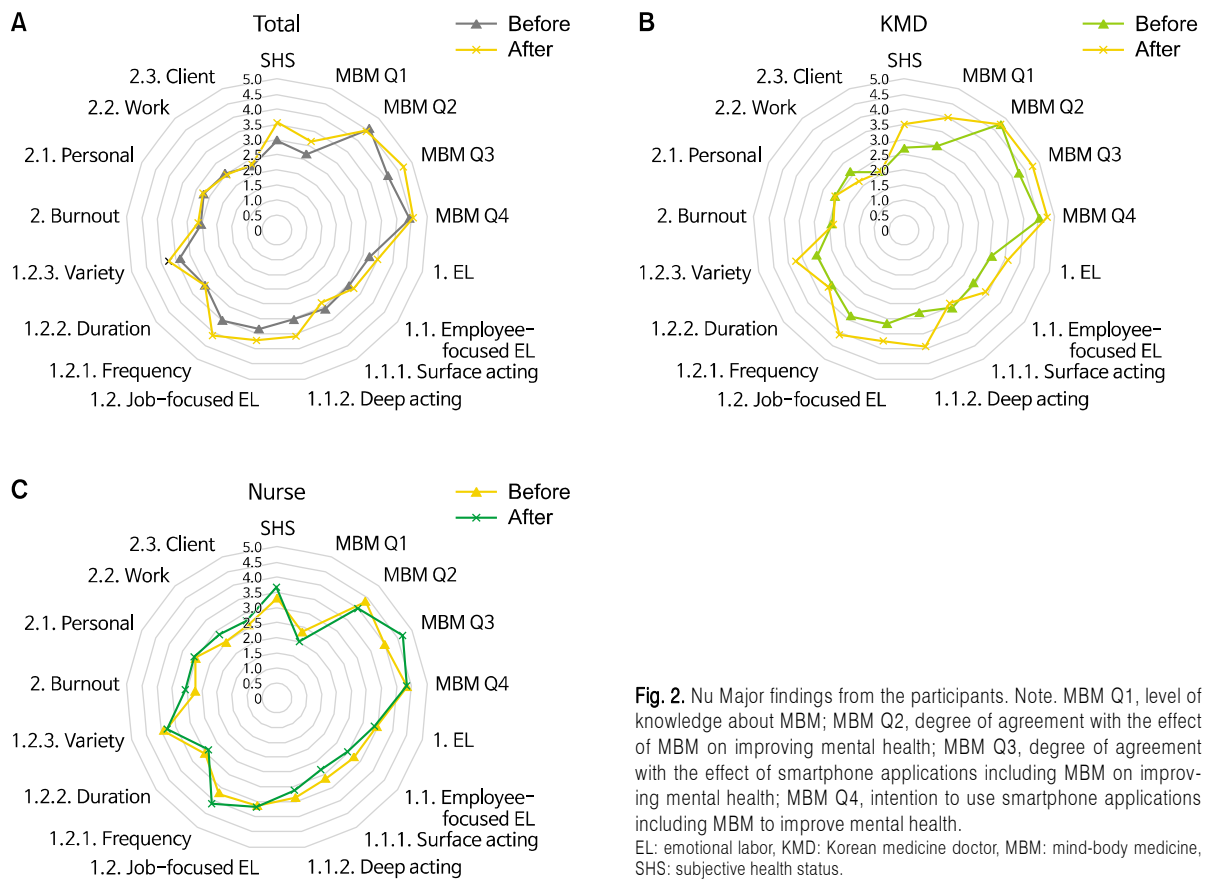
evident in KMDs (from 3.00 to 4.00), but not in nurses (from 2.33 to 2.00) (Fig. 2, Table 3).

Employee-focused emotional labor (from 3.02 to 3.19) and job-focused emotional labor (from 3.32 to 3.70) both increased slightly after the program. In the former case, it was explained that surface acting decreased (from 3.05 to 2.81), but deep acting increased (from 3.00 to 3.57). The latter case was explained by an increase in the frequency of interactions (from 3.48 to 4.1) and variety of expressions (from 3.38 to 3.76). Overall, changes in emotional labor were more noticeable in KMD than in nurses. There were no notable changes in burnout in the total sample. However, work-related burnout decreased for KMDs (from 2.63 to 2.21), while it increased for nurses (from 2.50 to 2.83) (Fig. 2, Table 3). Hwa-byung trait (from 31.29 to 28.71) and symptom scores (from 21.29 to 17.86) decreased after the program. However, this trend was noticeable in KMD, and did not appear in nurses, or rather showed an increase in symptom scores (from 25.33 to 28.33) (Fig. 3, Table 3).

The participants' satisfaction level with their participation in this program was very high. They also said they would like to participate in the program again or recommend it to their colleagues. They responded that they would continue to use the smartphone application even after the program ended and would recommend it to their colleagues. In the open-ended questions, some responded that being able to reflect on themselves was most helpful. Meanwhile, regarding the time when this program started, some responded they had difficulty concentrating because they were sleepy because it was evening time or because they were full from dinner (Table 4).

### IV. DISCUSSION

This case series reports the results of a mindfulness program for medical personnel implemented as



**Fig. 2.** Nu Major findings from the participants. Note. MBM Q1, level of knowledge about MBM; MBM Q2, degree of agreement with the effect of MBM on improving mental health; MBM Q3, degree of agreement with the effect of smartphone applications including MBM on improving mental health; MBM Q4, intention to use smartphone applications including MBM to improve mental health. EL: emotional labor, KMD: Korean medicine doctor, MBM: mind-body medicine, SHS: subjective health status.

a supplement to an existing case series. An important difference from the existing case series<sup>8)</sup> is the introduction of the smartphone application that promotes the daily routine of meditation. Another important difference is that the participants were not limited to nurses, but also included KMDs in a KM hospital. As far as we know, this case series is unique because it is the first such attempt to be made in South Korea.

It would be meaningful to understand the findings of this case series by comparing them with the findings of previous case series<sup>8)</sup>. What they have in common is the characteristic changes in emotional labor. Specifically, as found in the previous case series, an increase in deep acting, an aspect of employee-focused emotional labor, was observed in the current case series. Deep acting, which refers to demonstrat-

ing a person's authentic emotions, has been reported not to be related to emotional exhaustion<sup>14)</sup> but rather to mental health benefits such as better sleep<sup>15)</sup>. Interestingly, recent findings have found that mindfulness is positively related to psychological resilience, and the resilience is positively related to deep acting, which has the potential to improve task performance<sup>16)</sup>. There is still a lack of clinical studies examining the relationship between mindfulness training and aspects of emotional labor. However, the impact of the mindfulness and loving-kindness elements used in this program on aspects of emotional labor, especially surface acting and deep acting, seems worthy of further investigation. This is because it is closely related to the wellbeing, mental health, and burnout of medical personnel<sup>17)</sup>.

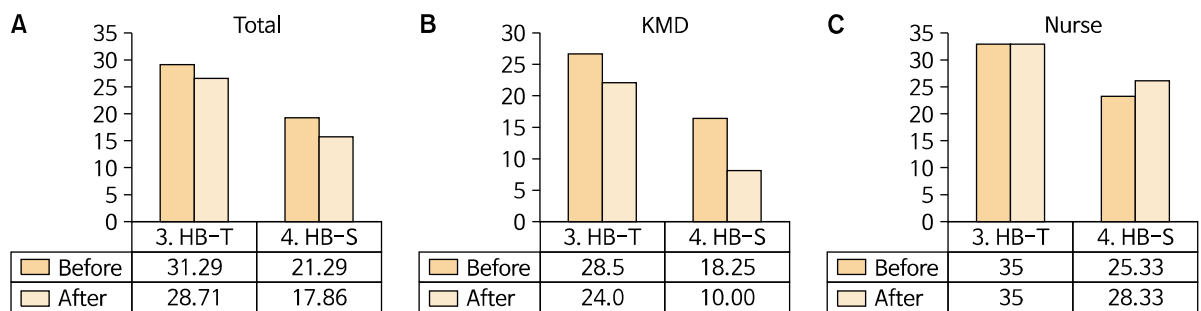
A major difference is that, unlike previous case

**Table 3.** Findings from the Participants (Mean, Median)

Variables	Total (n=7)		KMD (n=4)		Nurses (n=3)	
	Before	After	Before	After	Before	After
SHS	3.00 (3.00)	3.57 (4.00)	2.75 (2.50)	3.50 (3.50)	3.33 (3.00)	3.67 (4.00)
MBM Q1	2.71 (3.00)	3.14 (4.00)	3.00 (3.50)	4.00 (4.00)	2.33 (2.00)	2.00 (2.00)
MBM Q2	4.57 (5.00)	4.43 (4.00)	4.75 (5.00)	4.75 (5.00)	4.33 (4.00)	4.00 (4.00)
MBM Q3	4.14 (4.00)	4.71 (5.00)	4.25 (4.00)	4.75 (5.00)	4.00 (4.00)	4.67 (5.00)
MBM Q4	4.43 (4.00)	4.57 (5.00)	4.50 (4.50)	4.75 (5.00)	4.33 (4.00)	4.33 (4.00)
1. EL	3.19 (3.36)	3.48 (3.50)	3.02 (2.89)	3.57 (3.64)	3.43 (3.50)	3.36 (3.50)
1.1. Employee-focused EL	3.02 (3.17)	3.19 (3.50)	2.88 (2.67)	3.38 (3.58)	3.22 (3.50)	2.94 (2.83)
1.1.1. Surface acting	3.05 (3.33)	2.81 (3.00)	3.00 (2.83)	2.83 (3.00)	3.11 (3.33)	2.78 (2.33)
1.1.2. Deep acting	3.00 (3.00)	3.57 (3.67)	2.75 (2.50)	3.92 (3.83)	3.33 (3.67)	3.11 (3.33)
1.2. Job-focused EL	3.32 (3.50)	3.70 (3.50)	3.13 (3.06)	3.72 (3.75)	3.58 (3.50)	3.67 (3.50)
1.2.1. Frequency	3.48 (4.00)	4.10 (4.00)	3.33 (3.50)	4.08 (4.00)	3.67 (4.00)	4.11 (4.00)
1.2.2. Duration	3.00 (3.00)	3.00 (3.00)	3.00 (2.50)	3.13 (3.25)	3.00 (3.00)	2.83 (2.50)
1.2.3. Variety	3.38 (4.00)	3.76 (4.00)	3.00 (3.00)	3.75 (3.67)	3.89 (4.00)	3.78 (4.00)
2. Burnout	2.55 (2.47)	2.64 (2.42)	2.42 (2.47)	2.34 (2.34)	2.72 (3.00)	3.04 (3.05)
2.1. Personal	2.73 (2.71)	2.78 (2.71)	2.54 (2.50)	2.57 (2.57)	3.00 (3.43)	3.05 (3.14)
2.2. Work	2.57 (2.67)	2.48 (2.33)	2.63 (3.50)	2.21 (2.25)	2.50 (2.67)	2.83 (3.00)
2.3. Client	2.31 (2.50)	2.36 (2.33)	2.08 (2.17)	2.08 (2.33)	2.61 (2.67)	2.72 (2.33)
3. HB-T	31.29 (28.00)	28.71 (22.00)	28.50 (24.50)	24.00 (21.50)	35.00 (40.00)	35.00 (43.00)
4. HB-S	21.29 (25.00)	17.86 (14.00)	18.25 (21.50)	10.00 (10.50)	25.33 (29.00)	28.33 (34.00)

Note. MBM Q1, level of knowledge about MBM; MBM Q2, degree of agreement with the effect of MBM on improving mental health; MBM Q3, degree of agreement with the effect of smartphone applications including MBM on improving mental health; MBM Q4, intention to use smartphone applications including MBM to improve mental health.

EL: emotional labor, KMD: Korean medicine doctor, MBM: mind-body medicine, SHS: subjective health status.



**Fig. 3.** Changes of hwa-byung traits and symptoms of the participants.

HB: hwa-byung, HB-S: hwa-byung symptom score, HB-T: hwa-byung trait score, KMD: Korean medicine doctor.

series<sup>8)</sup>, no improvement was observed in the participants' burnout level. However, this differed depending on the occupation. Specifically, KMD showed an improvement in burnout levels, especially work-related burnout, after participating in the program, while nurses showed a worsening of work-related burnout. Similarly, hwa-byung symptoms were significantly reduced in KMDs, whereas they were increased in nurses. Several possibilities may explain

the differences between the two groups. First, there is a possibility that differences in digital literacy between the two groups may have been involved. Specifically, the three nurses had never used Zoom software before, which made it difficult for them to participate smoothly in the first two sessions. In this program, each participant was asked to share their experience in real time under the guidance of the instructor, but they complained of difficulties in this

**Table 4.** Participants' Satisfaction and Dissatisfaction with This Program (Mean, Median, Range)

Questions	KMD (n=4)	Nurses (n=3)
How helpful was this mindfulness program and smartphone application in your participation in the program? (0~10 point NRS)	8.25 (8.00) (7 to 10)	9 (9.00) (8 to 10)
If there were a program like this one in the future, would you be willing to participate? (1~5 point Likert scale)	4.25 (4.50) (3 to 5)	4.33 (4.00) (4 to 5)
Are you willing to continue using the provided smartphone application? (1~5 point Likert scale)	4.50 (4.50) (4 to 5)	4.33 (4.00) (4 to 5)
If there is a program like this one in the future, would you recommend it to your colleagues? (1~5 point Likert scale)	5.00 (5.00) (5)	4.33 (4.00) (4 to 5)
Are you willing to recommend the provided smartphone application to your colleagues? (1~5 point Likert scale)	5.00 (5.00) (5)	4.33 (4.00) (4 to 5)
Open-ended question (non-mandatory): Which program elements were most helpful?	<i>"It was nice to be able to consistently practice various meditations every two weeks and have time to reflect on myself as if it were a daily routine while performing the tasks given after each session. It was also nice to be able to get used to meditating on my own with help from a smartphone application after class. Among the meditations, loving-kindness meditation was especially good as an attempt to control my emotions a little, as I had severe emotional ups and downs and had many angry moments.", "Body scan and sitting meditation were of great help in helping me relax my tired body and mind and actively manage my stress.", "I learned ways to relieve my complicated mind and focus on my current state."</i>	<i>"It was nice to be able to recognize my body. Through this opportunity, I got to know my body a little bit more.", "Being introduced to various meditation methods and actually trying them was helpful. Meditation gave me an opportunity to reflect on myself and take care of my body and mind.", "I liked the compassion meditation."</i>
Open-ended question (non-mandatory): Which program elements were most difficult?	<i>"It was difficult to concentrate until the end because it was conducted late at night, which corresponds to the usual sleeping time."</i>	<i>"Since my dinner is around 7:30, I have often thought that my concentration will be poor when I participate in class when I am full.", "Breathing meditation was difficult."</i>

KMD: Korean medicine doctor, NRS: numeric rating scale.

process due to the difficulty of operating their smartphone. This has the potential to affect the authenticity of participation in meditation programs via Zoom and, by extension, the results. In this program planned for next year, it is considered desirable to check participants' proficiency in using Zoom software before starting and provide prior training.

A second potential reason for the significant difference is the difference in their work. They all work at the same KM hospital, but their duties are different and their human resource management systems are distinct. Because this case series was not conducted in a controlled environment, the results of partic-

ipation in this program may be affected by changes in their work environment, and it is possible that differences between the two groups can be explained by differences in these environments. However, what is important is that regardless of their work environment, both satisfaction with this program and intention to re-participate were high. In their open-ended responses, the participants reported that regardless of their job, the mindfulness program helped them improve their mental health. Therefore, the author assumes that the worsening of hwa-byung symptoms and job-related burnout observed in the nurses after the program was related to the work en-

vironment or personal events.

The limitations of this study are as follows. First, although this case series has increased the number of subjects compared to previous attempt<sup>8)</sup>, the number of participants is still small and there is no control group, making generalization of the results difficult. Second, the program provided online real-time mindfulness sessions via Zoom, as well as the smartphone application that could be used in individual's daily life. However, the participants' frequency of use of the smartphone application was not tracked. Additionally, it was not analyzed how much influence the use of the smartphone application had on changes in their mental health. Third, the long-term impact of the program on its participants was not evaluated. Although the smartphone application provided to them remains available, it cannot be assumed whether it will provide long-term mental health benefits to the participants.

## V. CONCLUSION

The first case series reports the results of a mental health improvement program for KMDs and nurses working at a KM hospital. A notable improvement in this case series compared to previous attempt is the use of the smartphone application that promotes mindfulness training, which has the potential to be used adjunctive to online real-time mindfulness sessions to help participants train mindfulness in their daily lives. After participating in the program, an increase in deep acting and a decrease in surface acting, which are aspects of emotional labor, were consistent with previous case series. However, the patterns of change in burnout and hwa-byung symptoms were different depending on the occupation of the participants. Participants' satisfaction with this program and smartphone application and willingness to recommend it to colleagues were high. However, this

study is only a small case series, and the author plan to continue to expand and improve the program based on its findings.

## CONFLICTS OF INTEREST

The author declares no conflict of interest.

## REFERENCES

1. National Academies of Sciences E, Medicine, National Academy of M, Committee on Systems Approaches to Improve Patient Care by Supporting Clinician W-B. Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being. Washington (DC): National Academies Press (US), Copyright 2019 by the National Academy of Sciences. All rights reserved.; 2019.
2. Conversano C, Marchi L, Miniati M. Psychological Distress Among Healthcare Professionals Involved in the Covid-19 Emergency: Vulnerability and Resilience Factors. *Clin Neuropsychiatry*. 2020;17:94-6.
3. Kim D, Shih CC, Cheng HC, Kwon SH, Kim H, Lim B. A comparative study of the traditional medicine systems of South Korea and Taiwan: Focus on administration, education and license. *Integr Med Res*. 2021;10:100685.
4. Kwon C, Park J, Ha D. Scoping Review of Research on Mental Health of Nurses Working in Korean Medicine Hospitals. *Korean Soc Orient Neuropsychiatry*. 2021;32:55-66.
5. Dossett ML, Fricchione GL, Benson H. A New Era for Mind-Body Medicine. *N Engl J Med*. 2020;382:1390-1.
6. Kriakous SA, Elliott KA, Lamers C, Owen R. The Effectiveness of Mindfulness-Based Stress Reduction on the Psychological Functioning of Healthcare Professionals: a Systematic Review. *Mindfulness (N Y)*. 2021;12:1-28.
7. Kwon CY, Lee B, Kwon OJ, Kim MS, Sim KL, Choi YH. Emotional Labor, Burnout, Medical Error, and Turnover Intention among South Korean Nursing Staff in a University Hospital Setting. *Int J Environ Res Public Health*. 2021;18:10111.
8. Kwon CY, Park DH. The First Attempt to Apply an Online Mindfulness Program to Nursing Staff in a Traditional Korean Medicine Clinic in COVID-19 Era: A Case Series. *Healthcare (Basel)*. 2023;11:145.
9. Gagnier JJ, Kienle G, Altman DG, Moher D, Sox H, Riley D. The CARE Guidelines: Consensus-based Clinical Case Reporting Guideline Development. *Glob Adv Health Med*. 2013;2:38-43.
10. Vettese LC, Toneatto T, Stea JN, Nguyen L, Wang JJ. Do mindfulness meditation participants do their homework? And does it make a difference? A review of the empirical



- evidence. *Journal of Cognitive Psychotherapy*. 2009;23:198-225.
11. Lee B. Development of a model for emotional labor worker's health. *Korean Journal of Occupational Health Nursing*. 2007;16:78-88.
  12. Ham M. Unpublished Master's Thesis. Gyeongsang University; Jinju, Republic of Korea: 2011. Path Analysis of Emotional Labor and Burnout of Nurses.
  13. Kwon J, Park D, JW K, Lee M, Min S, Kwon H. Development and validation of the Hwa-Byung Scale. *Korean Journal of Clinical Psychology*. 2008;27:237-52.
  14. Zhao X, Fu N, Freaney Y, Flood PC. Revisiting the Effect of Emotional Labor: A Multi-Level Investigation in Front-Line Service Teams. *Front Psychol*. 2020;11:570048.
  15. Yeh SJ, Chen SS, Yuan KS, Chou W, Wan TTH. Emotional Labor in Health Care: The Moderating Roles of Personality and the Mediating Role of Sleep on Job Performance and Satisfaction. *Front Psychol*. 2020;11:574898.
  16. Kim JS, Park HJ. How Service Employees' Mindfulness Links to Task Performance through Psychological Resilience, Deep Acting, and Customer-Oriented Behavior. *Behav Sci (Basel)*. 2023;13:657.
  17. Chen CC, Lan YL, Chiou SL, Lin YC. The Effect of Emotional Labor on the Physical and Mental Health of Health Professionals: Emotional Exhaustion Has a Mediating Effect. *Healthcare (Basel)*. 2022;11:104.