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Increasing Self-Compassion and State-Mindfulness to Maintain Mental Health of Health Care Professionals through *e-WellMind App:* A Cluster Randomized Controlled Trial

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ABSTRACT

Background: Work pressure and tight schedules have an effect on mood swings, boredom and burnout. This pressure has an impact on the quality of interaction between doctors/nurses and patients. This situation also has an impact on service providers who have the potential to experience mental health problems. **Objective:** This study was conducted to determine the effect of the e-WellMind digital application on self-compassion and state-mindfulness of professional health service providers in maintaining mental health. **Method:** The use of the Wellmind application is for 60 training sessions, with a duration of 5-10 minutes. This activity was attended by 22 health care professionals and 21 other people did not participate in this program. The effect of the Wellmind application was measured before and after the intervention was changes in self-compassion and state-mindfulness in health care professionals. This data is sourced from on Dryad. https://doi.org/10.5061/dryad.0zpc8672x. **Results:** The results showed that both groups had the same characteristics (homogeneous) for the variables of self-compassion (mean±SD) (28.8±6.93; p=0.680) and state-mindfulness (29.6±08.; p=0.564). There was a significant change after the application of the e-WellInd application to self-compassion (d1=.649; 95%CI=-.360 to -.035; p=.000; d2=.479; 95%CI= -.509 to -.100; p=.002 and *trait-mindfulness* (d_1=.761; *95%CI*=-39.3001 sampai -8.346; *p=.010*; d_2=.634; *95%CI*= -4.242 sampai -3.358; *p=.023).* **Conclusions:** The application of the e-WellMind digital application has an impact on protecting self-compassion and trait-mindfulness health care professionals in maintaining and maintaining mental health.

Keywords: *nurse, physician, health care, training, e-WellMind app*

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1. INTRODUCTION

Providing services to patients requires a high level of awareness in providing services. Busy schedules and high job demands make healthcare workers vulnerable to stress and fatigue [1]. It takes a strong effort as a healer in providing professional service quality [2]; [3].

Professional efforts, especially nurses, in preparing patients to face critical situations require qualified concentration and competence and have healthy coping [4]. In addition, their mental well-being will be disturbed, if it continues which will eventually affect professionalism in how to deal with patients and their mental health will be disturbed [5].

The high fatigue of doctors and nurses in carrying out their duties also affects how they interact with patients. The heavy burden of handling the Covid-19 outbreak has made doctors and nurses face extraordinary fatigue in overcoming the critical condition of patients and trauma to the work done [6]. Physical limitations and decreased mental conditions as a result of great stress, have an impact on the decline in physical and psychological conditions. They are very vulnerable to exposure to the Covid-19 virus and their vulnerability to impaired emotional control. Difficulty controlling oneself indicates that one's mental well-being will be impaired [7].

Some studies show that work stress can be reduced by changing the way you deal with stressful and stressful situations with self-control. It is clinically proven that fatigue that occurs due to tight work schedules and critical situations, can be resolved through individual-level strategies by improving self-welfare and organizational well-being in regulating workers and reducing working hours [8]. Individuals as a therapeutic tool for themselves, increasing self-awareness and compassion for themselves can reduce fatigue due to heavy work [9]. Studies on compassion training for medical students show an improvement in the welfare and quality of clinical services provided [10]. The welfare of nurses and doctors in providing health services clinically is related to the quality of care, health care costs and service quality are interrelated domains [11]. Therefore, the welfare of health professionals will have a wide impact, not only individually but hospitals as a profitable social organization.

The problem with the implementation of this program is the availability of loose time and the pressure of work and boredom that plague these professionals, causing the low implementation of the program. So it is necessary to think about how to apply it, especially the suitability of the time, length of the program and how to apply it periodically. Facing a situation like this, it is necessary to digitize the implementation of the program. Digitization of the program is not only more flexible, but also participants can conduct self-evaluations that are known immediately [12]. Existing applications have not been able to reach the limited time and high workload and critical patient conditions that are faced at all times. Therefore, it is necessary to design applications that are capable of providing feedback, scores, gaming and rewards in a closed-loop design system to drive high user compliance. With an app called WellMind, this app will indent the practice of mindfulness on the deep breath with the command of compassion. Considering the time limitations of professionals, the application only uses 5-10 minutes of time each training session for 60 digital sessions. The assessment of this app, is a change in attention and compassion to oneself and monitoring engagement at each training session. The use of this application is expected to be one of the solutions to improve the maintenance of mental well-being of health professionals.

2. METHOD

The study used a Randomized Control Study (RCT) design, followed by health professionals including nurses, nurses and other patient-related professionals at the University of California San Diego (UCSD). Participants are fluent in United Kingdom, the data of the study results are reported based on demographics related to age, gender and ethnicity. Participants are in good health without undergoing treatment. Participants complete the Maslach Burnout Inventory (MBI) at the time of screening; The MBI score does not reflect a high level of fatigue in our sample because all scores are less than the middle score of the MBI score range. A total of 22 people underwent the digital WellMind intervention and 21 were part of the contactless control group. All participants have an email and are determined based on the cluster of registration quarters of both treatment and control groups. The WellMind group received digital application interventions. To ensure compliance and help participants solve problems found. Meanwhile, the control group did not interact with the research team or the digital training resources provided to the intervention group. The samples were differentiated based on the difference in before and after effects (Cohen's >0.6), with beta (β) 0.8 with an alpha level of 0.05. The difference between the two groups was measured to find out only the result of its large size (Cohen's d>0.8) at beta 0.8 and alpha level 0.05.

WellMind's digital intervention is applied to the BrainE© platform implemented in Unity and is available on iOS and Android phone devices. The program is password-secured according to HIPAA rules and each user interacts through an alphanumeric study ID that is not linked to any personal health information. The use of adjusting participants' leisure time and involvement in awareness training focuses on nasfas, each session lasts 5-10 minutes, carried out for 60 sessions. The app is adapted to the game and adapts to performance. In addition, participants were asked to close their eyes, pay attention to their breath and tap the mobile phone screen after reaching a certain breath according to the instructions. The app will monitor the consistency of the beat. If the user is distracted based on the consistency of the low breath monitoring beat, the gentle chime will remind the user to let go of the distraction and turn attention to mindful breathing. Along with undergoing the study at level 1, participants tapped the screen after each breath. If they can do this consistently for three level 1 repetitions of 1 minute each, they move up to level 2 and track two breaths at once for 2 minutes, and so on. So, in performance-adapted tasks, the level reflects the number of minutes spent at that level and the number of breaths that the participant is asked to monitor repeatedly. The maximum level that can be achieved is level 10, which is monitoring 10 breaths at a time for up to 10 minutes. When users go up to the maximum level, they stay at this level until the end of all assigned sessions, which is 60 sessions. In a game-like format, when participants open their eyes at the end of the level, peaceful natural scenery will slowly unfold as a form of training reward.

Assessment of behavior before the intervention (pre/T1), after the intervention (post/T2); or a 3-month no-contact period for control; and follow-up (T3; 6 months after the initial intervention). Participants completed a validated behavioral self-report scale of self-compassion; Scale: a 12-item self-compassion scale, and mindfulness: a 14-item Mindful Attention Awareness Scale. These measures served as the primary outcomes. MBI measures were obtained as exploratory outcomes at T1 and T2. The Cronbach α measure

of reliability was calculated for each of these behavioral measures at baseline.

3. RESULTS AND DISCUSSIONS

Results

Table 1. Demographic Characteristics and Basic Behavior of Respondents

Variable	Groups				*p*
	WellMind (n=22)		Control (n=21)		
	n (%)	Mean ± *SD*	n (%)	Mean ± *SD*	
Gender					*.344*
a. Male	8 (36)		12 (57)		
b. Female	14 (64)		9 (43)		
Etnis					
a. Asia	8 (36)		8 (38)		*.19*
b. Black or African American	2 (9)		2 (10)		
c. More than 1 etnicity	10 (45)	9 (43)			
d. Other	2 (9)	2 (10)			
Age (years)		27.91±3.15		29.67±4.96	*.32*
MBI Emotional exhaustion		16.27±4.45		24.05±10.22	*.02**
MBI personal accomplishment		21.41±3.63		32.86±6.73	*.001**
MBI depersonalization		5.36±3.33		9.29±7.93	*.23*
Trait Minfulness		3.2±0.7		3.1±0.8	*.84*
Self Compassion		2.7±0.6		3.1±0.7	*.056*

*)*p<0.05 Signifikan*

Based on table 1, it shows that the variables that illustrate the meaningful correlation between the two groups are MBI personal accomplishment and emotional exhaution. This means that the existence of the variables between the treatment and control groups does not have the same variant, so the variables are not homogeneous. Furthermore, data related to the influence of variables can be seen in the following table 2.

Table 2. *Variance Equivalence between the Two Groups in the Implementation of the e-WellMind Application*

Variable	N	Mean ± SD	F (Levene's Test)	Sigα*
Trait Mindfulness				
T1-T2 (3 months)				
WellMind	22	3.178 ± .666	.459	.502
Control	21	3.129 ± .767		
T1-T3 (6 months)				
WellMind	22	3.400 ± .995	0.33	.857
Control	21	3.450 ± .887		
Self-Compassion				
T1-T2 (3 months)				
WellMind	22	2.691 ± .5.61	2.042	.673
Control	21	3.100 ± .724		
T1-T3 (6 months)			.124	.726

WellMind	22	3.155 ± .544
Control	21	3.290 ± .548

Keterangan
*) *Sig α>0.05 = Homogen* T1= Pre; T2 = Post; T3= Follow up

The equivalence of the data variants from the three measured showed that the data variants in both groups showed homogeneity. This occurred in both self compassion and mindfulness trait variables in the treatment and control groups, showing that the data had the same variant. There was a tendency to decrease the characteristics of the initial variant compared to the follow-up on the variables of self-compassion and mindfulness trait.

Table 3. The Effect of the e-WellMind Application on Self Compassion and State Mindfulness in Both Groups in Maintaining Mental Health Health Care Professionals.

Variable	N	Mean ± SD	Correlation	Sig α*)	95% Confidance Interval	
					Lower	Upper
Trait Mindfulness						
T1 –T2	43	-.205 ± .499	.761	.010*	-39.3001	-8.346
T2-T3	40	-3.800 ± 1.381	.634	.023*	-4.242	-3.358
Self-Compassion						
T1 –T2	43	-.202 ± .544	.649	,000*	-.360	-.035
T2-T3	40	-.305 ± .101	.479	.002*	-.509	-.100

*) *Sig α<0.05* = Significan

Table 3shows that there is an influence on the use of the e-WellMind application, there is an increase in self-compassion and trait mainfulness. The effect will decrease with the passage of time. This can be seen in the difference in correlation numbers in the early stages compared to follow-up. This change occurred in the variables of mindfulness and self-compassion. Conditions that will occur if the implementation is not routine will reduce the benefits of the program.

Discussion

This study was carried out by using the e-WellMind application to help nurses or doctors and other health workers to help maintain their mental health through increasing self-compassion and trait minfulness. Both data measurement criteria help them maintain consistency of professionalism without experiencing excessive fatigue and better control of emotions. The study, which uses a digital application that is easy to use, was carried out for 5-10 minutes for 60 sessions. The lack of contact between the treatment group and the control group makes the intervention more effective. The use of digital applications is a consideration because the benefits are easier to measure, their use adjusts to the respondent's time. It is generally done before interacting with patients. Another similar study, but the implementation of conventional techniques has provided implications for mental health maintenance, but in populations that have enough free time to do so [13].

The use of technology through smartphones to help reduce stress independently is more effective than through face-to-face consultation, which requires special time and a strong desire to realize that you need help [14]; [15]. The range of application-free research

in reaching mental well-being becomes more flexible and accommodating in reducing fatigue and improving health and well-being among students [16]; as well as reducing fatigue and improving professionalism attitudes and behaviors when working with patients [17].

The results of this study show that the e-WellMind digital application makes it easier for users to maintain the implementation of the program. This can be seen from the results of the study after the intervention was carried out initial evaluation and follow-up which still showed significant results. These results provide the fact that this application is one of the options in maintaining self-compassion and maintaining strategic mindfulness, in order to maintain mental well-being [18]. The persistence of sedentary behavior as evidence that applications are easy to work with and provide meaning digital applications make it easier to achieve self-compassion and provide better self-awareness in giving affection to others [19]; [20].

The application of digital applications in maintaining the mental health of nursing students helps improve body image and self-compassion [21]. Good mental health helps students manage stress [22] and helps think positively in managing cases for which they are responsible and helps improve the quality of interaction with patients [23]; Digital applications also make it easier for students to find problems that occur to them and solve them independently before needing professional help [24].

The e-WellMind application is a direct digital application where users can get feedback quickly and accurately, so that this application can maintain respondent engagement for several sessions [15]. Each session can be immediately felt in promoting self-compassion and fostering mindfulness in helping to interact with others [16]; [17]. The interaction of these two aspects supports caring behavior in nursing services.

Deep breathing exercises are part of the well mind as traditional meditation helps build self-awareness and strengthen the formation of self-compassion [18]. Self-compassion provides positive energy in building self-awareness in helping others [19]. Self-awareness in helping others will foster a caring attitude where nurses will have caring, open empathy and respect patients as unique individuals [20]; [21].

Training on self-awareness and self-well-being in service providers has an impact on their mental well-being [22]; [23]. Interventions can prevent excessive fatigue and provide self-awareness of the potential that still exists [24]. This self-awareness helps maintain mental health managing negative energy to positive energy in solving problems when dealing with patients [25]. Although there are barriers in the implementation of this therapy, the ease of its application will help achieve the desired self-awareness. The use of applications on smartphones makes it easier to achieve this program [26]; [27] .

The results of the study show statistically robust data, so the application can be programmed for all existing health workers. The e-WellMind app can prevent and reduce excessive fatigue and help maintain mental health [28]. The closed-loop feature drives the compliance level of completing this program. Security and confidentiality are important concerns in maintaining respondents' trust, thus providing a sense of security and trust. This may be what makes this program able to provide a real picture of the condition of this program [29]; [30].

4. CONCLUSION

The results of the study can be concluded that the use of the e-WillWind application is able to provide protection against self-compassion and trait mindfulness in health workers who provide direct services to patients. The ease of use makes this application need to be implemented at the organizational level for all health workers.

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Data Availability

The data set generated and analyzed in this study are available from the Data Dryad repository [31].

The WellMind digital intervention on the BrainE platform app is available for health care education and research on the website and is copyrighted for commercial use (Regents of the University of California Copyright #SD2024-132) [32].

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