



# Behavioral Activation, Mindfulness Exercises, and Loving-Kindness Meditation Exercises as Effective Therapies to Reduce Stress among Nursing Students' during COVID-19 Pandemic

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## Abstract

**BACKGROUND:** The coronavirus disease 2019 (COVID-19) pandemic could increase stress which will impact the student's achievement during the pandemic situation.

**AIM:** The purpose of the study was to analyze stress among Indonesian nursing students' after giving the interventions of behavioral activation (BA), mindfulness exercises (ME), and loving-kindness meditation exercise (LKME) during the COVID-19 pandemic.

**METHODS:** This study was a quasi-experimental study with a one-group pre-test-post-test design. Data collection has been conducted in 4 weeks' period on April–May 2021 using consecutive sampling. The sample of this study was 83 respondents in Level II of Indonesian nursing students at Stikes Kesdam IV/Diponegoro who have fulfilled the inclusion criteria. The instrument used was the Perceived Stress Scale.

**RESULTS:** The majority of respondents are women, namely, 64 respondents (77.1%). After being given the intervention of BA, ME, and LKME, respondents decreased their stress with a mean of 16.66 became 14.76. The dependent t-test showed that the p value was 0.000 ( $p < 0.05$ ), which means that there was a significance difference in stress pre- and post-intervention. The mean difference was 1.90 and the paired difference t-test was 0.000 ( $p < 0.05$ ).

**CONCLUSION:** BA, MEs, and LKME are recommended as stress coping mechanisms for Indonesian nursing students during the COVID-19 pandemic.

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## Introduction

Indonesia might still need a longer time to achieve the peak of the first wave of coronavirus disease 2019 (COVID-19) because the epidemiologic chart modeling of COVID-19 case distribution showed that the illustration of the increasing case was happened at the beginning of September 2020, on the middle of January 2021, and on the middle of February 2021 [1], [2]. The COVID-19 case distribution in Indonesia at the end of January 2021 reached 14,518 cases in a day and the highest cases on February 18 was 40.07% [3].

Those situations impacted the learning method in universities from attending class to online [4]. The learning method for theory in class or practice at the laboratory has been changed to be online learning [5]. Whereas when the COVID-19 case decreased, theory in class or practice at laboratory learning changed to be offline with the amount limitation of students [2], [5]. Clinical practice at the hospital forced the school to change the schedule that has been set in advance [5].

In the online learning period, students should stay at home, which impacts fewer activities that could be done by the students at home [4], [5]. This was happened due to the confusion in finding the activities that available to be done at home where most of the activities were conducted together with other friends at the university [5]. In conducting the online lecturing, several obstacles happened such as instability of network, a big fee to buy the internet package, difficulties in finding references for doing the assignment, and unpredictable time that make students should stand by, also inefficient energy, time, and financial [4], [5]. Those things forced the students to adapt to new situations that could lead to stress [1], [6], [7], [8].

Stress was a mental depressed feeling and stiffness due to external sources or might be caused by the individual perception [9]. Stress due to of COVID-19 pandemic could hinder the learning process and decrease academic skills which will impact the student's achievement [10], [11]. Stress which was not managed earlier could produce negative feelings such as distress, ill, sadness, and other severe psychological problem

like depression [9], [12]. Studies related to the stress in academic experienced by students who doing online learning were about 80 students (39.2%) in moderate stress, high stress 55 students (27%), and mild stress 14 students (6.9%) and low stress 11 students (5.4%) [13]. Furthermore, other studies mention that students who were evaluated during the pandemic showed a higher anxiety level, depression, and stress compared with the normal session [14]. The result showed that pandemics produced negative psychological effects for the students [13], [14]. It means that students experienced high pressure at the online learning during the COVID-19 pandemic. There was a need to manage stress problem caused by the COVID-19 pandemic among nursing students [15]. The intervention of behavioral activation (BA), mindfulness exercises (MEs), and loving-kindness meditation exercise (LKME) was assumed could decrease the mild to heavy stress for students during the COVID-19 pandemic [16], [17], [18], [19].

BA shifted and triggered positive emotion that according to the researcher was important for strong impact and resilience post-disaster due to the ability to facilitate the skill to revive from a negative experience, decrease the psychological burden caused by prolonged pressure, and release the cognitive resources to combat with daily stress and self-adaptation with the fluctuated situational demands [19]. A study about BA which was held for 10 weeks for post-traumatic stress disorder (PTSD) and major depressive disorder (MDD) treatment was given for four adult patients [20], [21]. In the evaluation stage post-treatment, two participants have not fulfilled the diagnostic criteria neither MDD nor PTSD and the other participants were not fulfilled the criteria for MDD. While some of the participants were experiencing several symptoms, overall the frequency and severity level were less than the pre-BA intervention [19], [20], [21].

ME involved practice based on the acceptance to observe and be involved in a recent situation without judging and being reactive [18]. ME accumulated several psychological benefits, including the decrease of anxiety and post-traumatic disorder symptoms [22], [23]. Results from RCT and non-RCT studies from 10 articles that have been reviewed found that mindfulness could decrease the stress in professional health-care students with a strong significant p-value [18], [23]. In common, ME has been used for professional health-care students. This intervention held through the meditation for 5–35 min during 3–6 weeks [22]. The other study studied the stress and anxiety in students found that in 40 studies which included in the study, stress has been reported in 34 studies, psychological stress in 11 studies, and attention in 24 studies [24]. Thirty-three from 40 and 25 from 34 studies showed a significant decrease in anxiety and stress for each; 22 from 24 studies should improve in attention [22], [24]. Overall, ME promised in decreasing stress and anxiety for students [25].

While we experienced stress, as we experienced in recent, could be relief to respect that we

are all together in the same situation and to lead kindness and feeling love for ourselves and others [9], [20], [21]. LKME transformed positive emotion (such as happiness, gentleness, warmth, and kindness) for own self, loved one, and another human, and finally all creatures [16]. LKME was linked with several psychological benefits, especially in decreasing depression, improving well-being, and improving social interaction. Simple LKME in 7 min has improved the social relation feelings and positive attitude to another person [17]. The experiment which involved 115 undergraduate students (74.8% of female; average age = 20.5 years, SD = 4.3) has been conducted to explore the effect of meditation to the social connectedness, the nature connectedness, and the effect [26]. Respondents listened to one of three simple guided meditation Mp3 records through the internet, which involved mindfulness meditation (MM), LKME, or progressive muscle relaxation (active control group) [26]. Respondents in MM and LKME groups reported a bigger nature and social connectedness at the post-test compared with the control group. There was no significant difference in connectedness between MM and LKME groups, showed that both were effective to increase the connectedness [26].

There was no study about BA, ME, and LKME for reducing stress among nursing students. So far, the combination of BA, ME, and LKME for stress has never been studied both qualitative and quantitative. Thus, the purpose of the study was to analyze the effect of BA, ME, and LKME on the nursing students' stress during the COVID-19 pandemic.

## Methods

### Study design

This study used quasi-experimental with a one-group pretest-posttest design.

### Sample

Stikes Kesdam IV/Diponegoro nursing students who experienced mild-to-severe stress and not infected by the COVID-19 were samples in this study. Students who were not willing to participate until the end of the study were excluded from the study.

### Data collection

We divided the procedure of data collection into pre-intervention and intervention phases. In the pre-intervention phase, we processed the permission letters from Stikes Kesdam IV/Diponegoro and the Research Ethics Committee for ethical approval. While in the intervention phase: (1) Information sheets and consent

forms provided to be signed by participants; (2) participants were assessed for stress using Perceived Stress Scale (PSS); (3) participants were given BA interventions and explanations for ME and LKME for 60 min; (4) participants are given ME for 60 min by focusing their awareness on thoughts, movements, and breath during inspiration and expiration here and now and feel oxygen entering through the airway, lungs, until it is distributed throughout the body; (5) participants are given LKME for 50 min using meditation to feel the presence of loved ones, feel the same thing as we want to be loved, want to live healthy, prosperous, and happy; and (6) participants assessed for post-intervention stress by PSS.

Data collection has been conducted in 4 weeks' period on April–May 2021 using consecutive sampling. The sample of this study was 83 respondents. The sample of this study was Level II nursing students at Stikes Kesdam IV/Diponegoro who were fulfilled the inclusion criteria.

### Statistical analysis

A normality test about the data was conducted first, further, the data were analyzed using paired t-tests.

### Ethical consideration

In this study, each participant who agreed signed the informed consent. Participant has the right to withdraw. The researcher got approved to conduct the study from the committee ethic of Dr. Soedjono Hospital (IRB Number: 001/EC/II/2021), further, the data about the level of stress among students were collected.

## Results

Data in Table 1 show that the majority of respondents were female. The number of female students was 64 respondents (77.1%).

**Table 1: Gender characteristic nursing students (n = 83)**

Variable	n	%
Gander		
Male	19	22.9
Female	64	77.1
Total	83	100

Data in Table 2 show that respondents after being given intervention of BA, ME, and LKME decreased the stress level with a mean of 16.66 to become 14.76. It means that the nursing students' stress levels have decreased after the intervention.

**Table 2: Status of respondents before and after intervention**

Variable	Pre-test	Post-test
Stress level		
Mean	16.66	14.76
SD	5.06	4.96

**Table 3: The difference of nursing students' stress pre and post behavioral activation, mindfulness practice, and loving-kindness meditation**

Variable	Mean difference ± SD difference	p*
Pre-post	1.90 ± 2.78	0.000

\*Paired t-test.

Data in Table 3 show that the difference of stress level decrease before and after the intervention of BA, ME, and LKME has given for the nursing students with a mean difference of 1.90. The paired differences t-test showed that p-value was 0.000 ( $p < 0.05$ ) which means that there was a significant difference in stress levels before and after intervention.

## Discussion

The characteristic respondent in this study showed that the majority of respondents were female with 64 respondents (77.1%). This is supported by the phenomenon on nursing profession's interest which was more from females compared with male. The nursing profession was dominated by females due to the female basic attitude which tended to be a person who was friendly, patient, neat, gentle, caring, and love to have socialization.

Respondents showed stress symptoms during the COVID-19 pandemic. Stress that experienced by respondents was moderate stress level with a mean of 16.66. After given by the intervention of BA, ME, and LKME, the stress level among respondents was decreased from 16.66 became 14.76 an average.

The previous studies documented a series of critical responses or massive disasters [27], [28]. The critical responses including chronic anxiety and stress post-traumatic, resilience, and recovery [9], [20], [21]. The possible effective strategy to decrease stress and improve resilience and recovery in the difficult period used several coping strategies (such as BA, acceptance-based coping, ME, and LKME) [17], [20], [22], [23].

Coping activities which mentioned as the BA shifted and triggered positive emotion that according to the researcher was important for strong impact and resilience post-disaster due to the ability to facilitate the skill to revive from a negative experience, decrease the psychological burden caused by prolonged pressure, and release the cognitive resources to combat with daily stress and self-adaptation with the fluctuated situational demands [19], [20]. Individual that has been isolated with social contact small circle could be involved in giving reward although the common tasks and self-care under the scary situation while focusing on living in their best way. They could, for example, do several activities included the hobby and mental challenging tasks such as solving the crossword puzzles; reading; listening to music; singing; playing musical instruments; watching

television; learning language; internet gaming; and preparing on how life will be better after the pandemic. Finding the way to be involved and respecting life during massive trauma was a strong predictor to improve psychological well-being and relieve post-traumatic stress symptoms [9], [19], [20], [21].

Researchers who studied stress have developed “3 C” model to estimate resilience in the current situation, including control, coherence, and connectedness [9], [24], [29]. Control was reflected in a belief that the self-resources could be accessed to achieve the respected outcome [9]. The target could be short term or long term. Moreover, in the short term, in the epidemic turbulence, people can use control measures in several ways [9], [20]. For example, they can drink medication as prescribed; enough rest; and find time to laugh: Self-preparation with factual information related to the viruses, and take preventive actions and other ways that needed to adapt to the condition changes; limit or increase the new exposure, according to preference; food sustainability; plan the daily activity; and anticipate potential short-term stress, seeing friends, and loved one. Writing daily notes every day including the event, goal, and meaning of life from any difficulties proved to be helpful because a study showed that the expressive writing and expression of emotional experience will be a benefit for psychological and physical [18], [25]. Coherence was conducted through the mindfulness practice while connectedness was conducted through loving-kindness meditation [18], [23], [25].

ME involved practice based on the acceptance to observe and be involved in the recent situation without judging and being reactive [22]. ME could be in the form of eating with awareness (which including, solely eating, and enjoying each piece) to the hourly meditation practice which focused on the breathing or emotional status [23], [25]. ME facilitated the awareness of mind, emotion, and sensation, possible its differentiation, to have a targeted and flexible coping strategy, telling the problems that will be solved, such as anger that hide the fear and anxiety [18], [26]. Because of decreasing the negative emotional impact, those things released cognitive-affective resources to respect [23]. Attention could replace pessimistic perspectives that enhanced by the feeling fear about the future by focusing awareness on the recent condition, because attention consistent attentively in song melody, the wind in someone’s face, cloud shape that changes, flower color, or aromatherapy candle, learned that “mind is only a mind” or the worry will disappear and transparently changes to be a mind and feeling and improving stress tolerance and enable reinterpreting negative emotions as temporary visitors who are sure to be replaced by other more welcome guests, thus strengthening resilience [18], [23], [26]. “Awareness muscle” could strengthen through practice, for example, setting the time set in the phone and practicing fully observation of attention to the emotion when the emotion comes and goes, and, as a reminder

of impermanence things.

LKME transformed positive emotion (such as happiness, gentleness, warmth, and kindness) for own self, loved one, and another human, and finally all creatures [16]. During LKME, people will focus on their own heart and think about the person who has strong positive emotion for them then distributed the positive feeling to themselves and others in their life and finally people in the world in general, because all of the suffered creature has right of kindness [16], [17]. ME involved attention in recent “with an open mind (without judging)” but LKME involved in the development of positive emotion “with an open heart” [22], [26].

Simple LKME practice in 7 min has improved the social relation feelings and positive attitude to another person [17]. LKM is a beneficial tool during the COVID-19 pandemic because promoted social interaction and built resilience by building positive emotion and social connection improved motivation to access and serve the social support, also generated pro-social behavior. Reminding own self to be kindness at the different time in a day could relieve accusing each other, healing the feeling inability and guilty, improved empathy to the other suffering, and eliminated the isolated and loneliness feeling in facing the difficulty [16], [17], [26]. This coping strategy was effective to decrease feeling fear and anxiety, also improving resilience and recovery during the COVID-19 pandemic.

## Conclusion

At the beginning of the COVID-19 pandemic, students were stress and complaining about being tired of online learning, feeling pressured because have to stay at home with an unclear time limit. After students were given the BA, ME, and LKME intervention, the stress level experienced by students was decreased. BE, ME, and LKME are recommended as stress coping mechanisms that can be used by students during the COVID-19 pandemic.

## References

1. Pragholapati A. New Normal “Indonesia” after COVID-19 Pandemic; 2020. p. 1-6.
2. Kementerian Kesehatan. Dashboard Kasus COVID-19 di Indonesia. Indonesian: Kementerian Kesehatan; 2021. Available from: <https://www.kemkes.go.id/article/view/20012900002/kesiapsiagaan-menghadapi-infeksi-novel-coronavirus.html>. [Last accessed on 2021 Nov 23].
3. IFRC, OCHA. COVID-19: Community Insights from the Asia Pacific Region-Indonesia, Malaysia, Myanmar, and Pakistan;

2020. Available from: <https://www.reliefweb.int/report/indonesia/covid-19-community-insights-asia-pacific-region-indonesia-malaysia-myanmar-and>. [Last accessed on 2021 Nov 23].
4. Pranata S, Nur FA, Wulandari H, Zainuddin MJ, Hidayat M. New Normal at Islamic Boarding School during the COVID-19 Pandemic in Sumbawa Island. 2021. p. 201-4.
  5. Atmojo AE, Nugroho A. EFL classes must go online! Teaching activities and challenges during COVID-19 pandemic in Indonesia. *Regist J*. 2020;13(1):49-76.
  6. Suryahadi A, Al Izzati R, Suryadarma D. The impact of COVID-19 outbreak on poverty: An estimation for Indonesia (Draft), SMERU Working Paper; 2020. p. 1-20. Available from: <http://www.smeru.or.id/en/content/impact-covid-19-outbreak-poverty-estimation-indonesia>. [Last accessed on 2021 Nov 23].
  7. Yuniti IG, Sasmita N, Komara LL, Purba JH, Pandawani NP. The impact of COVID-19 on community life in the province of Bali, Indonesia. *Int J Psychosoc Rehabil*. 2020;24(10):1918-29.
  8. Hizbaron DR, Ruslanjari D, Mardiatno D. Amidst COVID-19 pandemic: An adaptive disaster governance in Yogyakarta, Indonesia. *Soc Sci*. 2021;10(3):92. <https://doi.org/10.3390/socsci10030092>
  9. Schneiderman N, Ironson G, Siegel SD. Stress and health: Psychological, behavioral, and biological determinants. *Annu Rev Clin Psychol*. 2005;1:607-28. <http://doi.org/10.1146/annurev.clinpsy.1.102803.144141>  
PMid:17716101
  10. Schleicher A. The impact of COVID-19 on education: Insights from education at a glance 2020. *OECD J Econ Stud*. 2020;1-31. Available from: <https://www.oecd.org/education/the-impact-of-covid-19-on-education-insights-education-at-a-glance-2020.pdf>. [Last accessed on 2021 Nov 23].
  11. Dhawan S. Online learning: A panacea in the time of COVID-19 crisis. *J Educ Technol Syst*. 2020;49(1):5-22.
  12. Pranata S, Wu SF, Purwadi H, Gede D, Putra S, Wulandari H. Exploring of self-management experience among health professional survivors from Coronavirus disease 2019 in West Nusa Tenggara, Indonesia. *Open Access Maced J Med Sci*. 2021;9:19-27.
  13. Sa'diyah H, Pratiwi EY. The effect of online learning on students learning motivation. *IJPSE Indones J Prim Sci Educ*. 2021;2(1):11-8.
  14. Browning MH, Larson LR, Sharaievska I, Rigolon A, McAnirlin O, Mullenbach L, *et al*. Psychological impacts from COVID-19 among university students: Risk factors across seven states in the United States. *PLoS One*. 2021;16(1):e0245327. <https://doi.org/10.1371/journal.pone.0245327>  
PMid:33411812
  15. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, *et al*. Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health*. 2020;17(5):1729. <http://doi.org/10.3390/ijerph17051729>  
PMid:32155789
  16. Zeng X, Chiu CP, Wang R, Oei TP, Leung FY. The effect of loving-kindness meditation on positive emotions: A meta-analytic review. *Front Psychol*. 2015;6:1693. <http://doi.org/10.3389/fpsyg.2015.01693>  
PMid:26579061
  17. Hofmann SG, Grossman P, Hinton DE. Loving-kindness and compassion meditation: Potential for psychological interventions. *Clin Psychol Rev*. 2011;31(7):1126-32. <http://doi.org/10.1016/j.cpr.2011.07.003>  
PMid:21840289
  18. Hofmann SG, Gómez AF. Mindfulness-based interventions for anxiety and depression. *Psychiatr Clin North Am*. 2017;40(4):739-49. <http://doi.org/10.1016/j.psc.2017.08.008>  
PMid:29080597
  19. Mazzucchelli TG, Kane RT, Rees CS. Behavioral activation interventions for well-being: A meta-analysis. *J Posit Psychol*. 2010;5(2):105-21. <http://doi.org/10.1080/17439760903569154>  
PMid:20539837
  20. Wagner AW, Jakupcak M, Kowalski HM, Bittinger JN, Golshan S. Behavioral activation as a treatment for posttraumatic stress disorder among returning veterans: A randomized trial. *Psychiatr Serv*. 2019;70(10):867-73. <http://doi.org/10.1176/appi.ps.201800572>  
PMid:31337325
  21. Nixon RD, Nearmy DM. Treatment of comorbid posttraumatic stress disorder and major depressive disorder: A pilot study. *J Trauma Stress*. 2011;24(4):451-5. <http://doi.org/10.1002/jts.20654>  
PMid:21755543
  22. Boyd JE, Lanius RA, McKinnon MC. Mindfulness-based treatments for posttraumatic stress disorder: A review of the treatment literature and neurobiological evidence. *J Psychiatry Neurosci*. 2018;43(1):7-25. <http://doi.org/10.1503/jpn.170021>  
PMid:29252162
  23. Ortiz R, Sibinga EM. The role of mindfulness in reducing the adverse effects of childhood stress and trauma. *Children (Basel)*. 2017;4(3):16. <http://doi.org/10.3390/children4030016>  
PMid:28264496
  24. Salari N, Hosseini-Far A, Jalali R, Vaisi-Raygani A, Rasoulpoor S, Mohammadi M, *et al*. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Global Health*. 2020;16(1):57. <http://doi.org/10.1186/s12992-020-00589-w>  
PMid:32631403
  25. Wiguna RI, Dwidiyanti M, Sari SP. The influence of mindfulness on the decreasing anxiety in nursing students to support academic learning: A literature review. *Holist Nurs Health Sci*. 2018;1(1):24.
  26. Aspy DJ, Proeve M. Mindfulness and loving-kindness meditation. *Psychol Rep*. 2017;120(1):102-17.
  27. Pranata S, Widodo S, Vranada A, Mariyam M. How to prepare a school based disaster preparedness in Indonesia. *Adv Health Sci Res*. 2021;33:528-33. <http://doi.org/10.2991/ahsr.k.210115.103>
  28. Purwadi H, Breaden K, McCloud C, Pranata S. The SALT and START triage systems for classifying patient acuity level: A systematic review. *Nurse Med J Nurs*. 2021;11(3):413-27.
  29. Andreou E, Alexopoulos EC, Lionis C, Varvogli L, Gnardellis C, Chrousos GP, Darviri C. Perceived stress scale: Reliability and validity study in Greece. *Int J Environ Res Public Health*. 2011;8(8):3287-98. <http://doi.org/10.3390/ijerph8083287>  
PMid:21909307