

DAHAGA: An Islamic spiritual mindfulness-based application to reduce depression among nursing students during the COVID-19 pandemic

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Abstract

Background: The COVID-19 pandemic significantly impacts students' mental health. Most of them may experience depression. Due to restrictions and social distancing during the pandemic, counseling may not be applicable in detecting the problems. Therefore, an Islamic spiritual mindfulness-based application called DAHAGA is created in order to detect and reduce depression. It is believed that this innovative app could reduce mental health problems among students.

Objective: This study aimed to determine the effect of DAHAGA on reducing depression among nursing students during the COVID-19 pandemic in Indonesia.

Methods: This was a quasi-experimental study with a comparison group pretest/posttest design conducted from May to June 2020. Seventy students were selected using convenience sampling, of which 35 were assigned in an experimental group and a comparison group. The validated Indonesian Version-Beck Depression Inventory-II (BDI-II) was used for data collection. Paired *t*-test and independent *t*-test were used for data analysis.

Results: There was a significant effect of DAHAGA on depression ($p < 0.001$). The level of depression after intervention (*mean* 11.49, *SD* 4.49) was lower than it before the intervention (*mean* 17.20, *SD* 4.94). Additionally, there was a significant difference in depression level between the experimental and comparison groups after the intervention with a *p*-value of < 0.001 .

Conclusion: The DAHAGA is proven effective in reducing depression. Therefore, this study offers a new and innovative app that fits with the COVID-19 pandemic to help Muslim students maintain their health status. The findings also support Islamic spiritual mindfulness as a part of nursing interventions among psychiatric nurses to deal with mental health problems, especially depression.

Keywords

COVID-19; mindfulness; nursing; students, mental health, depression; Islam; Indonesia

The outbreak of novel coronavirus diseases (COVID-19) was first reported at the end of 2019 in Wuhan, China (Manik et al., 2021). The virus has rapidly spread throughout the world. On 11 March 2020, the World Health Organization (WHO) declared the pandemic outbreak

(WHO, 2020; Sadang & Palompon, 2021). Due to this pandemic, many universities in Indonesia are starting to implement distance teaching and learning activities or online lectures (Abidah et al., 2020).

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Even before the COVID-19 pandemic, research shows that many nursing students experience depression (Tung et al., 2018). Similarly, Njim et al. (2020) reported that the prevalence of depression among nursing students in two regions in Cameroon reached 69.57%, and 26.40% of these students experienced severe depression. However, Asia was the region with the highest prevalence of depression in nursing students (43.0%) (Tung et al., 2018). The majority of depression can be increased depending on stressors and environmental conditions (Acharya et al., 2018).

There is no doubt that the pandemic exacerbates depression among students (Graupensperger et al., 2020). Multiple stressors in a pandemic situation contribute to the increased levels of depressive thoughts among students. A previous study found that 72.93% of students in Italian universities experienced depression during the COVID-19 pandemic (Villani et al., 2021). In Indonesia, 41.5% of nursing students experienced depression during the pandemic (Hasanah et al., 2020).

Prolonged depression can affect students' academic performance and clinical practice (Chernomas & Shapiro, 2013). Also, research showed that 59 and 87% of suicide victims suffered from severe depression, and up to 15% of them eventually die of suicide (Gonda et al., 2007). Hence, it is necessary to identify an appropriate approach to help nursing students deal with depression or its symptoms.

Islamic spiritual mindfulness is one of the interventions that adopt an Islamic spiritual approach to deal with psychological problems and psychiatric disorders (Asiah et al., 2019). Mindfulness is practiced with a high level of awareness, believing that every problem an individual is facing comes from God (Allah), and it is only God (Allah) that has the power to overcome (Dwidiyanti et al., 2019; Munif et al., 2019). Previous studies have investigated the effect of Islamic spiritual mindfulness. It was found that it is effective on anxiety and depression among pregnant mothers in Iran (Aslami et al., 2015), drug adherence on patients with schizophrenia in Indonesia (Ardinata et al., 2019; Ardinata et al., 2021), the stress of family of patients with schizophrenia (Utama et al., 2020), depression level in older people at nursing homes (Arini et al., 2019), and depression among patients in a psychiatric hospital in Indonesia (Asiah et al., 2019). However, these studies only focused on depression for non-students and were conducted before the pandemic.

The application of Islamic spiritual mindfulness and the detection of depression among students may not be adequate and limited during the COVID-19 pandemic due to the restriction and social distancing. In fact, most students are studying from home, and the teachers are unable to monitor. Therefore, the researchers in this study developed an innovative application called DAHAGA (*Deteksi Sehat Bahagia*/Happy Healthy Detection), an Islamic spiritual mindfulness app, to prevent or reduce depression among students. As the application has not yet been studied, this study aimed to determine the effect of DAHAGA on reducing depression among nursing students.

This study would benefit mental health nursing services that aim to maintain optimal health and well-being and prevent psychological disorders. Inability to perform self-care or deal with impaired bodily functions related to mental and emotional distress is vital in mental health prevention practices, including avoiding depression and suicides (Videbeck, 2008). Nurses should be able to identify problems to prevent depression through innovations that facilitate the detection of disorders as early as possible, especially during the pandemic. Thus, DAHAGA would be the best fit to help nurses and nurse educators to develop an awareness of the problems faced by nursing students and identify depression levels to increase the ability to perform self-care.

Overview of Islamic Spiritual Mindfulness

The Islamic spiritual mindfulness is the combination of three concepts: mindfulness, spiritual, and Islam. Mindfulness is simply a state of mind, a process of keeping one's mind in the present moment, on purpose, non-judgmentally, fully observe and accept what is experienced in life from a place of calm objectivity, and detached from potentially destructive thoughts and feelings (Creswell, 2017; Dwidiyanti et al., 2019; Munif et al., 2019). Spiritual means believing and connecting beyond the physical/material world to the soul and spirit state of existence (Dwidiyanti et al., 2019; Munif et al., 2019). Meditation and other relaxation techniques connect the two concepts, in which we pay attention to thoughts, feelings, and sensations at that moment without being overwhelmed or overly reactive while connecting to stronger spirits (Dwidiyanti et al., 2019; Munif et al., 2019).

Mindfulness is found in various forms, in all religious and secular traditions, from East to West, and has roots in Buddhism, Hinduism, Judaism, Christianity, and Islam (Dwidiyanti et al., 2019; Munif et al., 2019). However, in this study, we focus only on the Islamic perspective. Islamic spiritual mindfulness refers to a spiritual state of an individual who is conscious of the awareness of God (Allah) over their soul, innermost thoughts/feelings, and actions (Dwidiyanti et al., 2019; Munif et al., 2019). In other words, it is comprehensive self-knowledge and self-awareness that Allah is always watching us at all times, which consequently will change our actions, feelings, thoughts, and inner states of being to be better. It can also be described as a mutual awareness, while we are of Allah, and Allah is aware of us (Mindful Muslim Life, 2021).

Islamic spiritual mindfulness exercise consists of six steps (Dwidiyanti et al., 2019): (1) *intention* - generating a desire in the heart with full awareness according to needs prayed to Allah accompanied by the belief of Muroqobahtullah (the belief of feeling supervised by Allah), (2) *self-evaluation* - self-introspection by acknowledging shortcomings and accepting without judgment of oneself and generating a desire to correct mistakes, (3) *body scan* - realizing every mistake made and believing that Allah is Most Forgiving by fulfilling the conditions of repentance. The conditions for repentance are to create a sense of

regret, stop and be determined not to repeat the sins that have been committed, and fulfill the rights of others who have been hurt, such as apologizing, (4) *repentance* - focusing on feeling the reactions of the heart and body, such as pounding, heat in the chest, heaviness in the neck, etc., and accept these reactions with complete acceptance and relaxation, (5) *prayer* - praying to God solemnly then blowing it into the palm and washing it on the organs of the body that feel hurt or pain, (6) *surrender* – giving (oneself) up to Allah with sincerity to get benefit and prevent harm, and (7) *relaxation* - holding the body that hurts or pain, take a deep breath, and then cough (Dwidiyanti et al., 2019).

Methods

Study Design

This study used a quasi-experimental design with a comparison group pretest/posttest design. The study was conducted from May to June 2020.

Participants

The participants in this study are 148 bachelor nursing students (semesters one to eight) at the Faculty of Medicine, Diponegoro University, Indonesia. The number of participants in this study was calculated using G*Power 3.1 (Faul et al., 2009) with type of a priori power analysis for independent t-test, with Effect Size (ES) value of > 0.80 (Munif et al., 2019), power of 0.95, and error probability ratio of 0.05. The total samples needed were 70, with 35 assigned in an experimental group and a comparison group.

Random sampling could not be used in this study because the students would be selected if they fit inclusion criteria, especially the students who experienced mild depression as indicated using Beck Depression Inventory-II (BDI-II), held Islamic religion, and agreed to participate. So, we conveniently examined the students one by one, and those who had depression were asked to join the study until the required samples in each group were fulfilled.

Instrument

The Beck Depression Inventory-II (BDI-II) (Beck et al., 1996) was used for data collection. The inventory consists of 21 questions. The Indonesian version of the BDI-II was available (Sorayah, 2018) and considered valid and reliable using a confirmatory factor analysis (CFA). Each answer is scored on a scale value of 0 to 3. Higher total scores indicate more severe depressive symptoms. The standardized cutoffs used differ from the original: 0–13 (minimal depression), 14–19 (mild depression), 20–28 (moderate depression), 29–63 (severe depression) (Sorayah, 2018).

Intervention

The experimental group in this study was given spiritual training using DAHAGA. DAHAGA was an android-based application that contained mental health service packages

that focus on Islamic spiritual mindfulness intervention. This application offers features that make it easier for individuals to self-detect depression they experienced. These features are developed based on the experts' agreement through a series of workshop meetings. A patent for the DAHAGA app has also been granted by the Director General of Intellectual Property, Ministry of Law and Human Rights, Indonesia (Grant Number: EC00202114477). The following are the features of the "DAHAGA" application (Figure 1 and Table 1):

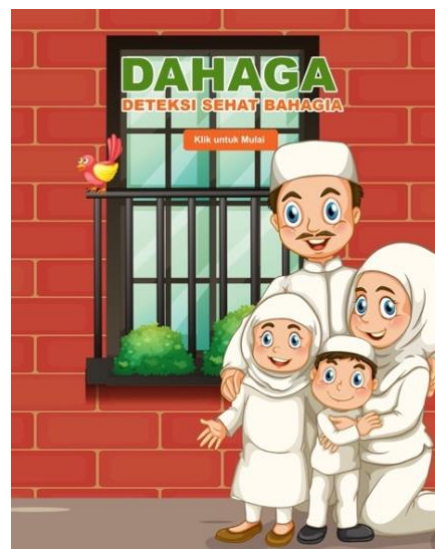


Figure 1 Homepage of DAHAGA App

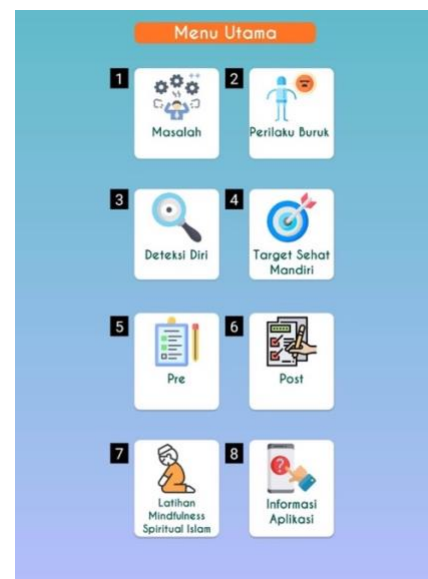


Figure 2 Features of DAHAGA App

The explanation of each feature is described in the following.

1. **The Problem Feature** (or *Masalah*) is a means to make it easier for someone to detect problems that they had with their closest people (family members, such as father, mother, brother, sister, husband,

wife, and others), other people (e.g., neighbors, friends at home or work, and others), and the environment (Dwidiyanti et al., 2019). The problem databases in this feature were validated by the participants of the workshops organized three times, related to the environmental problems that were too broad and had to be more specific.

2. **The Bad Behavior Feature** (or *Perilaku Buruk*) was developed based on a focus group discussion with 20 participants. They wrote any bad behaviors on their books which were then collected and analyzed. This feature contained 13 items of bad behaviors, which were validated by the participants of the workshops organized three times. These bad behaviors were used as a reference for independent health targets that should be carried out. The validation was related to the behaviors concerning ritual implementation, which need to be simplified and not too detailed.

This feature is to identify how far the users can remember and admit (in a mindful state) previous bad behaviors they have done. The 13 items include (1) rarely have five times of prayer, (2) seldom read Qur'an, (3) rarely Dua (a prayer of invocation), (4) think negatively, (5) jealous, (6) arrogant, (7) Riya (show-off), (8) hurt others, (9) vindictive, (10) lie, (11) dirty talk, (12) immoral behavior, and (13) fornication (eye, mind, and physical).

3. **Self-Detection Feature** (or *Deteksi Diri*) contains seven items of feelings currently expressed by participants, including angry, broken heart, sadness, cough, headache, and hard to breathe. These items were validated by the participants of workshops organized three times. After the data related to problems, bad behaviors, and self-detections were identified, the results were then used to identify factors causing depression. Validation was carried out using real pictures to determine the expression of the problems faced.

4. **Independent Health Target Feature** (or *Target Sehat Mandiri*) contains ten items about independent health targets that participants planned to change for improvement. These items were validated by the participants of workshops organized three times. This feature serves as a solution that the participants would achieve after identifying problems, bad behavior, and self-detection. During the validation, several targets were removed as they were confusing and did not relate to the issues that the participants were experiencing. The ten items include (1) forgiving everyone who hurts or disappoints, (2) praying on time and in a congregation, (3) reading Qur'an every day, (4) drawing closer to Allah and always prays or participates in Islamic studies, (5) understanding yourself and others, (6) being more patient and sincere, (7) learning to smile, at least a day to twenty people you meet, (8) thinking positively, (9)

always being grateful and realizing Allah's grace, and (10) being more open-minded and not quickly getting angry.

5. **Pretest Feature** is to detect depression before the intervention using the Beck Depression Inventory-II (BDI-II) (Beck et al., 1996; Sorayah, 2018).
6. **Pretest Feature** is to detect depression after intervention using the Beck Depression Inventory-II (BDI-II) (Beck et al., 1996; Sorayah, 2018).
7. **Islamic Spiritual Mindfulness** (or *Latihan Mindfulness Spiritual Islam*) contains a step-by-step tutorial / Standard Operating Procedure (SOP) on Islamic spiritual mindfulness that had been previously identified by the researchers. In the SOP, the individuals would be invited to consciously accept the bad behaviors that had been done and try to correct them through independent health targets that would be performed. This feature was packaged in an audio form that could be listened to by participants. This mindfulness exercise contained six steps: intention, self-evaluation, body scan, repentance, prayer, surrender, and relaxation. The steps are explained in the background (overview of Islamic spiritual mindfulness). The procedure can be done between 10 to 15 minutes.
8. **Information Feature** (or *Informasi Aplikasi*) contains information related to the app, developers, and contents.

The comparison group was given a book of Islamic spiritual mindfulness only (Dwidiyanti et al., 2019) (see **Figure 3**). There was no spiritual training provided; only after the whole process of study was completed, the researchers offered them the same treatments as done in the experimental group.

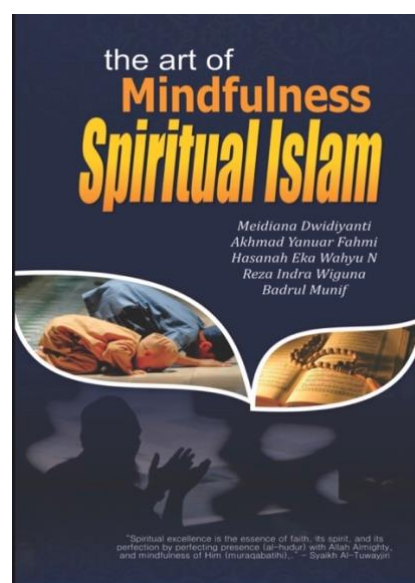


Figure 3 Islamic spiritual mindfulness book cover

Data Collection

The data collection was performed using a website linked to the "DAHAGA" application for screening. The data were collected in a nursing college with the help of two research assistants. The researchers ensured that the research assistants had been given training for the procedures of the data collection. Their jobs were to facilitate the participants in filling out and using the "DAHAGA" application in the WhatsApp group. Each participant in the experimental group was asked to do a pretest before applying each feature of Islamic spiritual mindfulness in the app. The participants were asked to do the mindfulness exercise six times and then followed by a posttest. All data were recorded automatically in the app and could be accessed by the researchers and admin only.

In the comparison group, the pretest and posttest were conducted online using Google Forms. The research assistants also helped them via WhatsApp. After practicing mindfulness according to the book, the participants were asked to do a posttest.

Data Analysis

Data were analyzed using descriptive statistics and bivariate analysis. As data were normally distributed,

paired *t*-test and independent *t*-test were used to determine the effect of the intervention on depression in each group and compare its impact between the experiment and comparison groups. The significance level is set at 0.05.

Ethical Consideration

This study received ethical clearance from the Health Research Ethics Committee of the Department of Nursing, Faculty of Medicine, Diponegoro University, with a reference number of 99/EC/KEPK/D.Kep/IV/2020. The researchers also ensured that each student had signed a written informed consent prior to data collection. Each has a right to withdraw from the study at any time without penalty. Confidentiality of the data was also ensured.

Results

Seventy participants were able to join and no one withdrawn from the study. The majority of them were aged 18-22 years old and included in the category of early adulthood (Hurlock, 2009). The difference in depression levels among students can be seen in Table 1.

Table 1 Difference in the level of depression among students in the intervention and comparison groups ($N = 70$)

Group	Depression		Mean Difference	p -value ^a
	Pretest	Posttest		
	Mean±SD	Mean ±SD		
Experiment ($n=35$)	17.20±4.94	11.49±4.49	4.28	<0.001 ^a
Comparison ($n=35$)	16.49±4.11	16.34±4.92	1.80	0.861 ^a
p -value ^b	0.513 ^b	<0.001 ^b		

^aPaired *t*-test | ^bIndependent *t*-test

Based on the results of the paired *t*-test as shown in Table 1, it could be concluded that there was a significant effect of DAHAGA on the level of depression in the experimental group, seen from a significant difference in the depression level before and after the intervention ($p < 0.001$). In contrast, there was no significant difference in the level of depression in the comparison group before and after the intervention ($p = 0.861$). This result is also supported by the statistical result of the independent *t*-test, which revealed a significant difference in depression level between the experimental group and the comparison group after the intervention with a p -value of <0.001. This finding indicates that the Islamic spiritual mindfulness combined with other features in the innovative app effectively reduces depression levels among students.

Discussion

This study aimed to examine the effect of DAHAGA application on reducing depression among nursing students. The results revealed a significant effect of the app on depression level in the experimental group seen from the dependent *t*-test analysis and confirmed by the

independent *t*-test analysis, which shows a significant difference in depression level after interventions between the experimental and comparison groups. However, the findings of this study support previous research (Asiah et al., 2019) that Islamic spiritual mindfulness intervention is effective not only for patients with depression who are admitted to a psychiatric hospital but also for nursing students, as indicated in our study.

An innovative intervention created in this study using the DAHAGA application helps the students identify problems that they have or the environment quickly through the detection feature. However, identifying the problems is essential for the prevention of mental disorders (Videbeck, 2008). The app also helps detect the bad behavior and independent healthy target plans (Dwidiyanti et al., 2019), which consequently awareness among the students will be increased, and they could cope with their problems independently and prevent mental disorders, especially depression. Additionally, the app allows the researchers to monitor and help the condition of the students, which is considered the benefit of the app. In contrast, the use of the Islamic spiritual mindfulness book alone was not effective in reducing depression levels

among students compared to app use, as indicated in this study.

Notably, the DAHAGA application is helpful and practical, especially during the pandemic. [Wei et al. \(2020\)](#) said that the provision of integrated internet-based interventions effectively reduced symptoms of stress and depression related to COVID-19. In this study, the DAHAGA application provides eight features: (1) problem, (2) bad behavior, (3) early detection, (4) independent health target, (5) pretest, (6) posttest, (7) mindfulness exercises, and (8) information. The problem feature contains questions about the problems faced, while the bad behavior feature contains questions regarding the user's experiences of the committed behavior. The early self-detection element consists of two forms of questions, namely, current feelings and physical conditions. The independent health target feature contains target choices/user expectations for independent health. The pretest and posttest feature includes questionnaires about depression that should be completed before and after mindfulness exercises. The mindfulness training feature contains mindfulness exercise guidelines that aim to help users consciously accept the committed bad behavior and try to correct it through independent health targets that have been planned earlier ([Sadipun et al., 2018](#); [Dwidiyanti et al., 2019](#); [Munif et al., 2019](#)).

It is noteworthy that Islamic spiritual mindfulness is fully emphasized in the app. Islamic spiritual mindfulness is an exercise that aims to help individuals aware of their current condition or experience by involving the presence of God ([Dwidiyanti et al., 2019](#)). It is also believed that Islamic spiritual mindfulness is able to change behaviors and build positive interpersonal skills through intention and self-evaluation ([Dwidiyanti et al., 2019](#)). According to [Yapko \(2016\)](#), for the healing of depression, a patient should be taught about (1) the ability to make effective decisions, (2) effective coping or stress management skills, (3) skills to build and maintain positive relationships, (4) problem-solving skills, and (5) building a realistic and motivating future. Such abilities are taught at each stage of Islamic spiritual mindfulness. The stages of mindfulness include the intention and self-evaluation that describe the decisions made effectively concerning the behavior to be changed. As for coping, stress management in Islamic spiritual mindfulness is taught through seven steps: intention, self-evaluation, repentance, body scan, prayer, surrender, and relaxation ([Dwidiyanti et al., 2019](#)).

Implications of this Study for Nursing Practice

Several implications of this study include: First, the findings of this study provide evidence to support Islamic spiritual mindfulness as a part of nursing intervention among mental health nurses or psychiatric nurses to reduce depression in their practice; Second, this study offers a new and innovative app called DAHAGA, which fit with the COVID-19 condition today where the utilization of the technology is necessary; Third, the results of the study provide additional knowledge for nursing science, which

the concepts of Islam, spiritual, and mindfulness merged in order to provide holistic nursing care, especially for the individuals who hold Islamic religion.

Limitation of the Study

We notice two limitations of the study. First, when installing the "DAHAGA" application, some participants experienced difficulties due to the device restrictions. As a result, there was a time difference in starting the mindfulness exercises using the application. Further study is recommended to encounter this issue, which the app could be used in any devices. Second, as the app specifically focuses on individuals who hold Islam; thus, it cannot be used in others.

Conclusion

There was a significant effect of using the DAHAGA-Islamic spiritual mindfulness-based app on reducing the students' levels of depression. The app can be used to detect and treat depression among college students. Also, it can be utilized as a part of the intervention in nursing practice. The extended application of the app with non-students and non-Muslims is a necessity to validate the findings.

Declaration of Conflicting Interest

The authors declared that they do not have a conflict of interest, either individuals or institutions.

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Authors' Contribution

All authors contributed equally to the drafting of the manuscript, revising the manuscript critically for important intellectual content, conception, and design of the study, acquisition of data, analysis, and/or interpretation of data. All authors approved the final version of the article.

Data Availability Statement

The research data could not be shared because they were saved by Diponegoro University's server. We strictly followed the research ethics to ensure the confidentiality of the data.

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