

THE RELATIONSHIP OF DHIKR ACTIVITY AND STRESS LEVELS WITH SLEEP QUALITY AMONG MEDICAL STUDENTS AT UNIVERSITAS MUHAMMADIYAH SEMARANG

Atika Lestari *, Wijayanti Fuad, Rochman Basuki

Fakultas Kedokteran, Universitas Muhammadiyah Semarang

Jl. Kedungmundu No.18, Kedungmundu, Kec. Tembalang, Kota Semarang, Jawa Tengah 50273, Indonesia

Email: atikalestari2507@gmail.com

Abstract

Sleep quality is an important determinant of physical and psychological health and may be influenced by various factors, including stress and religious practices such as *dhikr*. Medical students are particularly vulnerable to sleep disturbances due to high academic demands and psychological stress. This study aimed to analyze the relationship between *dhikr* activity and stress levels with sleep quality among medical students at Universitas Muhammadiyah Semarang. An observational analytic study with a cross-sectional design was conducted among 124 medical students from the 2021 cohort selected using a total sampling technique. Data were collected using the *Dhikr* Intensity Questionnaire, the Depression Anxiety Stress Scale (DASS-42), and the Pittsburgh Sleep Quality Index (PSQI). Data were analyzed using the Spearman rank correlation test with a significance level of $p < 0.05$. The results showed that most respondents had high *dhikr* activity (37.1%), mild stress levels (33.9%), and good sleep quality (62.1%). A significant positive relationship was found between *dhikr* activity and sleep quality ($r = 0.684$; $p = 0.001$), indicating that higher *dhikr* activity was associated with better sleep quality. A significant relationship was also found between stress levels and sleep quality ($r = 0.214$; $p = 0.017$). In conclusion, *dhikr* activity and stress levels were significantly associated with sleep quality among medical students at Universitas Muhammadiyah Semarang.

Keywords: Dhikr Activity, Stress Level, Sleep Quality, Medical Student

Introduction

Sleep is a fundamental physiological need that plays an important role in maintaining both physical and psychological health. Sleep quality is determined not only by sleep duration but also by sleep depth, sleep latency, frequency of awakenings, and an individual's satisfaction with their sleep (Lisiswanti et al., 2019). Good sleep quality has been shown to improve productivity, concentration, physical performance, body regeneration, immune function, and emotional balance (Amalia et al., 2022). Conversely, poor sleep quality can lead to various adverse consequences, including decreased cognitive function, impaired concentration, memory decline, and disturbances in both physical and mental health.

Medical students are among the populations most vulnerable to sleep quality disturbances. High academic demands, intensive lecture schedules, numerous assignments, and inadequate time management often contribute to sleep deprivation and poor sleep quality among students (Bayantari et al., 2022). These conditions may negatively affect the cognitive and psychomotor abilities that are essential in medical education.

Sleep disorders remain a significant health problem in many countries. The global prevalence of sleep disorders has been reported to reach 86%, while in Indonesia, approximately 10% of the population, or around 23 million out of 238 million people, experience sleep disturbances (Mardiyah et al., 2022). Among medical students, several studies have reported that 43%, 58%, and even up to 88% of students experience poor sleep quality associated with stress, prolonged anxiety resulting from extensive educational curricula, and inadequate sleep hygiene practices (Bachtiar & Seborg, 2022). If these conditions are not identified and addressed promptly, they may adversely affect students' health in the long term.

Sleep quality is influenced by various internal and external factors, including medication use, lifestyle, sleep habits, physical activity, environmental conditions, age, gender, and psychological status (Haryati & Yunaningsi, 2020; Permatasari, 2020). Among these factors, stress is one of the variables most frequently associated with decreased sleep quality. Poorly managed stress can reduce productivity, effectiveness, and creativity, while also encouraging maladaptive behaviors such as smoking, alcohol consumption, and the use of certain medications as coping mechanisms for anxiety (Haryati & Yunaningsi, 2020; Permatasari, 2020).

Globally, it is estimated that approximately 450 million individuals experience psychological distress or stress. In Indonesia, around 10% of the population experiences psychological stress (Wicaksono & Choandi, 2020). Among university students, the prevalence of stress has been reported to range from 38–71% worldwide, 39.6–61.3% in Asia, and 36.7–71.6% in Indonesia (Bayantari et al., 2022). Studies involving medical students in Indonesia have shown that approximately 50.8% experience stress, while 49.2% do not. The high prevalence of stress among medical students is influenced by several factors, including demanding academic requirements, high achievement expectations, financial difficulties, living far from family, and inadequate time management skills (Bayantari et al., 2022).

The relationship between stress and sleep quality is bidirectional. High levels of stress can disrupt sleep patterns through imbalances in stress-related hormones, whereas poor sleep quality may further exacerbate an individual's stress level (Amalia et al., 2022). Physiologically, stress increases sympathetic nervous system activity and activates the hypothalamic–pituitary–adrenal (HPA) axis, resulting in elevated cortisol secretion. Increased cortisol levels, particularly during the night, may inhibit melatonin production, which plays a crucial role in regulating the sleep–wake cycle, thereby contributing to sleep disturbances (Sherwood, 2018; Chu et al., 2024; Savage et al., 2024). Therefore, effective strategies to manage stress are necessary to maintain optimal sleep quality.

One non-pharmacological approach that may help reduce stress is *dhikr* (Islamic remembrance of Allah). From an Islamic perspective, *dhikr* refers to the act of remembering Allah SWT through the heart, speech, and actions (Muvid, 2020). The Qur'an explains that tranquility of the heart can be attained through *dhikr*, as stated in Surah Ar-Ra'd verse 28, which emphasizes that hearts find peace only through the remembrance of Allah (Kamila, 2020). In addition to its spiritual significance, *dhikr* has also been reported to provide psychological relaxation. It may help balance sympathetic and parasympathetic nervous system activity, allowing the body to enter a calmer and more relaxed state (Daryono, 2022).

Various studies have demonstrated that *dhikr* can serve as a form of psychotherapy that helps reduce tension, anxiety, and stress. The practice of *dhikr* can stimulate parasympathetic nervous system activity associated with the body's relaxation response, thereby reducing heart rate, blood pressure, and stress hormone levels (Nur Anggraieni, 2014; Daryono, 2022). Such a state of relaxation has the potential to improve sleep quality because individuals may find it easier to achieve a calm condition before sleep. Therefore, *dhikr* is believed to be associated not only with stress levels but also with an individual's sleep quality.

Although the relationship between stress and sleep quality has been extensively investigated, studies integrating *dhikr* activity as a factor that may influence both variables, particularly among medical students, remain limited. This is noteworthy because medical students constitute a population at high risk of experiencing stress and sleep quality disturbances due to substantial academic demands. Therefore, this study was conducted to analyze the relationship between *dhikr* activity and stress levels with sleep quality among medical students at Universitas Muhammadiyah Semarang. The findings of this study are expected to provide scientific evidence regarding the potential of *dhikr* as a non-pharmacological approach for helping students manage stress and improve sleep quality.

Method

This study employed an observational analytic design with a cross-sectional approach, in which data were collected at a single point in time to determine the relationships among *dhikr* activity, stress levels, and sleep quality. The study was conducted in October 2024 at the Faculty of Medicine, Universitas Muhammadiyah Semarang, and was classified within the field of Islamic medicine.

The target population consisted of all students of the Faculty of Medicine, Universitas Muhammadiyah Semarang, while the accessible population comprised students from the 2021 cohort. A total sampling technique was applied, whereby all members of the population who met the study criteria were included as respondents. The inclusion criteria were 2021 cohort students of the Faculty of Medicine, Universitas Muhammadiyah Semarang, who were Muslim, actively enrolled as students, and willing to participate in the study. The exclusion criteria included students who did not complete the questionnaire in its entirety or failed to return the completed questionnaire. Based on the total sampling technique, the final sample consisted of 145 students.

The independent variables in this study were *dhikr* activity and stress level, while the dependent variable was sleep quality. *Dhikr* activity was defined as the practice of remembering Allah through various forms of worship and recitations performed in daily life. *Dhikr* activity was measured using the *Dhikr* Intensity Questionnaire developed by Kurniasari (2016), which assessed respondents' activities during the previous month. The scores were categorized as very low (<68), low (68–75), high (76–84), and very high (>84). Stress levels were measured using the stress subscale of the Depression Anxiety Stress Scale (DASS-42), consisting of 14 items that assessed respondents' conditions during the previous month. Scores were categorized as normal (0–14), mild (15–18), moderate (19–25), severe (26–33), and extremely severe (>34). Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), which consists of 18 questions covering subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. PSQI scores were categorized as good sleep quality (0–5) and poor sleep quality (6–21).

The data used in this study were primary data obtained through questionnaires completed by respondents who met the study criteria. Prior to data collection, all respondents were provided with informed consent as an agreement to participate in the study. The research instruments consisted of the *Dhikr* Intensity Questionnaire, the DASS-42 questionnaire to measure stress levels, and the PSQI questionnaire to assess sleep quality.

The collected data underwent several processing stages, including editing, coding, data entry, processing, cleaning, and tabulating. Data analysis was subsequently performed using SPSS software. Univariate analysis was conducted to describe respondents' characteristics and the distribution of each study variable, including age, sex, *dhikr* activity, stress level, and sleep quality. Bivariate analysis was performed using the Spearman Rank correlation test to determine the relationships between *dhikr* activity and stress levels with sleep quality. Statistical significance was established at $p < 0.05$ with a 95% confidence level.

This study received ethical approval (Ethical Clearance) from the Research Ethics Committee of the Faculty of Nursing and Health Sciences, Universitas Muhammadiyah Semarang, under approval number 676/KE/09/2024, issued on September 28, 2024. The confidentiality of all respondents' identities was maintained, and each respondent had the right to refuse participation or withdraw from the study at any time. All research-related expenses were the responsibility of the researcher.

Results

This study was conducted on October 20, 2024, at the Faculty of Medicine, Universitas Muhammadiyah Semarang, after obtaining ethical approval (*ethical clearance*) number 676/KE/09/2024. The study employed a cross-sectional design with a correlational analytical approach. A total sampling technique was applied to all students from the 2021 cohort of the Faculty of Medicine.

Of the total population of 145 students, 124 respondents met the inclusion criteria and participated in the study. A total of 21 students were excluded from the analysis, including 10 students who declined to participate, 5 students who did not complete the questionnaire, 5 students who did not return the completed questionnaire, and 1 non-Muslim student.

Table 1 Characteristics of Research Subjects.

Characteristics		Frequency	Percentage (%)
Gender	Female	102	82,3%
	Male	22	17,7%
Age	20 years	20	16,1%
	21 years	66	53,2%
	22 years	36	29,0%
	23 years	2	1,6%

Based on Table 1, the majority of respondents were female, accounting for 102 participants (82.3%), while male respondents numbered 22 (17.7%). Regarding age distribution, most respondents were 21 years old, comprising 66 participants (53.2%), followed by those aged 22 years with 36 participants (29.0%), 20 years with 20 participants (16.1%), and 23 years with 2 participants (1.6%).

Univariate Analysis

Univariate analysis was conducted to describe the distribution of each study variable, namely *dhikr* activity, stress level, and sleep quality. The results of the univariate analysis are presented in Table 2.

Table 2. Univariate Analysis

Characteristics		Frequency	Percentage (%)
Sleep Quality	Poor	47	37,9%
	Good	77	62,1%
Dhikr	Very low	14	11,3%
	Low	22	17,7%
	High	46	37,1%
	Very high	42	33,9%
Stress level	Very severe	4	3,2%
	Severe	40	32,3%
	Moderate	5	4%
	Mild	42	33,9%
	Normal	33	26,6%

Based on Table 2, the highest proportion of respondents demonstrated a high level of *dhikr* activity, comprising 46 respondents (37.1%), followed by the very high category with 42 respondents (33.9%), the low category with 22 respondents (17.7%), and the very low category with 14 respondents (11.3%).

The assessment of stress levels using the DASS-42 questionnaire showed that most respondents were categorized as having mild stress, with 42 respondents (33.9%). Furthermore, 40 respondents (32.3%) were classified as experiencing severe stress, 33 respondents (26.6%) were in the normal category, 5 respondents (4.0%) experienced moderate stress, and 4 respondents (3.2%) experienced extremely severe stress.

Meanwhile, the assessment of sleep quality using the PSQI indicated that the majority of respondents had good sleep quality, accounting for 77 respondents (62.1%), whereas 47 respondents (37.9%) had poor sleep quality.

Bivariate Analysis

Bivariate analysis was conducted using the Spearman rank correlation test to determine the relationships between *dhikr* activity and stress levels with sleep quality.

The results of the analysis examining the relationship between *dhikr* activity and sleep quality are presented in Table 3.

Table 3 Relationship Between Dhikr Activity and Sleep Quality							
	Sleep Quality		Total	%		<i>P value</i>	Strength of Correlation
	Poor	Good		Percentage			
Dhikr	Very Low	13	1	14	11,3%	0,001	+0,684
	Low	21	1	22	17,7%		
	High	10	36	46	37,1%		
	Very High	3	39	42	33,9%		
Total	47	77	124	100%			

Based on the results of the Spearman rank correlation test presented in Table 3, the obtained *p*-value was 0.001 ($p < 0.05$), indicating a statistically significant relationship between *dhikr* activity and sleep quality among students of the Faculty of Medicine, Universitas Muhammadiyah Semarang, class of 2021. The correlation coefficient was +0.684, indicating a strong positive correlation. These findings suggest that higher levels of *dhikr* activity are associated with better sleep quality among respondents.

The results of the analysis examining the relationship between stress level and sleep quality are presented in Table 4.

Table 4 Relationship Between Stress Levels and Sleep Quality							
	Sleep Quality		Total	%		<i>P value</i>	Strength of Correlation
	Poor	Good		Percentage			
Stress level	Very severe	4	0	4	3,2%	0,017	+0,214
	Severe	22	18	40	32,3%		
	Moderate	4	1	5	4%		
	Mild	2	40	42	33,9%		
	Normal	15	18	33	26,6%		
Total		47	77	124	100%		

Based on the results of the Spearman rank correlation test presented in Table 4, the obtained p -value was 0.017 ($p < 0.05$), indicating a statistically significant relationship between stress level and sleep quality among students of the Faculty of Medicine, Universitas Muhammadiyah Semarang, class of 2021. The correlation coefficient was +0.214, indicating a weak positive correlation. These findings demonstrate the existence of a relationship between stress level and sleep quality among the study respondents.

Discussion

Relationship Between *Dhikr* Activity and Sleep Quality Among 2021 Cohort Medical Students at Universitas Muhammadiyah Semarang

This study employed the Spearman rank correlation test to analyze the relationship between two study variables, namely *dhikr* activity and sleep quality among students from the 2021 cohort of the Faculty of Medicine, Universitas Muhammadiyah Semarang. The results showed a significant relationship between *dhikr* activity and sleep quality, indicating that higher levels of *dhikr* activity were associated with better sleep quality.

Various factors may influence the relationship between *dhikr* activity and sleep quality. The findings of this study revealed that most respondents regularly engaged in *dhikr*, as reflected by their high scores on the *Dhikr* questionnaire. A total of 46 respondents (37.1%) demonstrated a high level of *dhikr* activity, while 77 respondents (62.1%) reported good sleep quality. These findings are consistent with previous studies reporting a significant relationship between *dhikr* and sleep quality among university students. *Dhikr* has been shown to induce a relaxation response that promotes tranquility and helps alleviate various sleep disturbances. Feelings of calmness and relaxation may improve mood and reduce anxiety. This finding is in line with a study conducted by Dinda Adila, which demonstrated that *dhikr* therapy effectively improved sleep quality among students. Furthermore, a study by Al-Halaj found that *dhikr* positively influenced sleep quality among older adults. In that study, 8 respondents (53.33%) experienced a reduction in the frequency of sleep disturbances after practicing *dhikr* (Adilla, 2024; Al-Halaj, 2014)

Dhikr is one of the means through which Muslims draw closer to Allah SWT and is considered an activity that brings peace to the soul. This concept is reflected in Surah Ar-Ra'd verse 28, which states: "Those who believe and whose hearts find tranquility in the remembrance of Allah. Indeed, it is through the remembrance of Allah that hearts find tranquility." The recitation of *dhikr* may stimulate the hypothalamus and influence the pineal gland, thereby enhancing immune function and promoting melatonin production. Through the relaxation response it generates, *dhikr* may facilitate optimal melatonin secretion. Practicing *dhikr* before sleep can create feelings of calmness and comfort, reducing stimuli directed to the Reticular Activating System (RAS). This process may decrease cerebral cortex activity, enhance parasympathetic nervous system activity, suppress sympathetic nervous system activity, and reduce norepinephrine levels. Consequently, activation of the RAS becomes less likely, helping maintain restful sleep. Restful sleep may improve an individual's perception of sleep quality (Al-Halaj, 2014)

Under such conditions, cellular and physiological processes function in a more balanced manner, creating a sense of internal tranquility. This state of calmness may improve physiological balance, strengthen immune function, and ultimately contribute to better sleep quality (Vanida, 2023).

The practice of *dhikr* may also stimulate the parasympathetic nervous system, which is responsible for the body's relaxation response. This activity can lower heart rate, reduce blood pressure, and decrease stress hormone levels. Sleep quality is strongly influenced by an individual's ability to relax both mentally and physically before bedtime. Due to its calming nature, *dhikr* may help individuals achieve a more peaceful and relaxed mental state, thereby facilitating the initiation of

sleep. Other studies have also reported that *dhikr* therapy offers substantial benefits because praying to Allah may generate positive psychological energy. The combination of these mechanisms produces electrical impulses that stimulate the limbic system, central nervous system, and pituitary gland, leading to increased endorphin secretion and reduced adrenaline levels. These effects help regulate breathing, improve blood oxygen levels, and generate feelings of comfort, calmness, and happiness (Wijonarko, 2024)

Nevertheless, high levels of *dhikr* activity may coexist with poor sleep quality due to other factors that influence sleep. These factors include stress and mental health conditions, such as chronic anxiety or depression that may not be fully resolved, as well as newly emerging psychological pressures that diminish the positive effects of *dhikr* on sleep. Lifestyle and behavioral factors, including the use of electronic devices before bedtime, insufficient physical activity, and irregular eating habits, may also adversely affect sleep quality. Environmental factors such as noise, uncomfortable room temperature, or excessive light exposure can disrupt sleep. Furthermore, irregular sleep schedules, varying bedtimes, shift work, or the absence of a consistent nighttime routine may impair sleep quality despite frequent engagement in *dhikr* (Purwanto et al, 2013; Purwanto, 2013)

Relationship Between Stress Level and Sleep Quality Among 2021 Cohort Medical Students at Universitas Muhammadiyah Semarang

Based on the results of the bivariate analysis examining the relationship between stress levels and sleep quality among students from the 2021 cohort of the Faculty of Medicine, Universitas Muhammadiyah Semarang, a significant relationship was identified between stress level and sleep quality.

Various factors may influence the relationship between stress and sleep quality. Stress is recognized as one of the major factors affecting sleep quality (Permatasari, A. N. 2020). Individuals experiencing high levels of stress tend to have poorer sleep quality, whereas lower stress levels are generally associated with better sleep quality (Sahfi, 2020). These findings are consistent with the results of the present study, in which most respondents experienced mild stress (42 respondents; 33.9%) and reported good sleep quality (77 respondents; 62.1%).

The findings are also consistent with previous research conducted by Teuku Muhammad Kevin Azwar, which reported a significant relationship between stress level and sleep quality (Azwar, 2013). Individuals experiencing mild stress are assumed to have more stable emotional states, which may indirectly contribute to better sleep quality. In addition, mild stress is likely to promote physiological, psychological, and behavioral conditions that support healthy sleep among students (Permatasari, A. N. 2020). Previous studies have also reported differences in stress levels and sleep quality between first-year and final-year university students. First-year students often experience stress related to adaptation processes, whereas final-year students tend to experience stress associated with thesis completion and concerns about their future careers. Nevertheless, both groups remain vulnerable to sleep disturbances, although first-year students frequently exhibit more irregular sleep patterns due to new academic and social demands (Permatasari, A. N. 2020; Mhamad, 2021)

Stress triggers increased secretion of epinephrine, norepinephrine, and cortisol, which affect the central nervous system and induce a state of heightened alertness. This condition may negatively affect sleep quality. Hormonal changes associated with stress may also disrupt both Non-Rapid Eye Movement (NREM) and Rapid Eye Movement (REM) sleep cycles, resulting in frequent nighttime awakenings and nightmares. According to the theory proposed by Iqbal, excessive reactions to academic demands and substantial cognitive burdens often cause students to experience stress, which may subsequently affect sleep quality (Sherwood, L. 2018)

One of the hormones closely associated with stress is cortisol. Cortisol plays an important role in the body's stress response. Cortisol and melatonin interact closely in regulating the sleep–wake

cycle and physiological responses to stress. Cortisol levels normally rise in the morning to promote wakefulness and activity, whereas melatonin levels increase at night to prepare the body for sleep. Stress may disrupt this balance by elevating cortisol levels during the evening, thereby inhibiting melatonin production and contributing to sleep disturbances. When individuals experience calmness and comfort, the parasympathetic nervous system becomes more active, helping protect the body from excessive cortisol and catecholamine activity while facilitating recovery and relaxation processes (Ahsani, 2023)

Another factor that may contribute to the relationship between stress level and sleep quality is the practice of *dhikr*. The present study demonstrated that most respondents exhibited good *dhikr* habits, as reflected by high scores on the *Dhikr* questionnaire among students from the 2021 cohort of the Faculty of Medicine, Universitas Muhammadiyah Semarang.

Dhikr is an activity with relaxation-inducing properties that can reduce tension and stress while promoting inner peace (Nur Anggraeni, 2014). This finding is consistent with previous studies reporting a relationship between *dhikr* activity and stress levels (Anggraeni, 2014; Sucinindyasputeri, 2017). Individuals who regularly engage in *dhikr* are assumed to experience lower stress levels, which may positively affect their overall health and sleep quality.

A well-controlled stress response may help individuals maintain healthy sleep patterns and sleep cycles, ultimately contributing to better sleep quality.

Conclusion

Based on the data and analysis examining the relationships between *dhikr* activity, stress levels, and sleep quality among students from the 2021 cohort of the Faculty of Medicine, Universitas Muhammadiyah Semarang, it can be concluded that the majority of respondents were female, comprising 102 respondents (82.3%), and most were 21 years old, accounting for 66 respondents (53.2%).

Regarding *dhikr* activity, 14 respondents (11.3%) were categorized as having very low *dhikr* activity, 22 respondents (17.7%) were in the low category, 46 respondents (37.1%) were in the high category, and 42 respondents (33.9%) were in the very high category. In terms of stress levels, 4 respondents (3.2%) were categorized as experiencing extremely severe stress, 40 respondents (32.3%) severe stress, 5 respondents (4.0%) moderate stress, 42 respondents (33.9%) mild stress, and 33 respondents (26.6%) were classified as normal. With regard to sleep quality, 47 respondents (37.9%) had poor sleep quality, whereas 77 respondents (62.1%) demonstrated good sleep quality.

The analysis of the relationships among the study variables showed that there was a significant relationship between *dhikr* activity and sleep quality among students from the 2021 cohort of the Faculty of Medicine, Universitas Muhammadiyah Semarang, as indicated by a *p*-value of 0.001 ($p < 0.05$). The findings suggest that higher levels of *dhikr* activity are associated with better sleep quality. Furthermore, a significant relationship was also found between stress level and sleep quality, as evidenced by a *p*-value of 0.017 ($p < 0.05$). These results indicate that lower stress levels are associated with better sleep quality among the respondents.

References

- [1] Lisiswanti, R. *et al.* Hubungan Antara Kualitas Tidur Terhadap Hasil Belajar Mahasiswa Program Studi Pendidikan Dokter Fakultas Kedokteran Universitas Lampung. *J Agromedicine*. 2019; 6:68–71.
- [2] Nur Rizqy Amalia, Z., Fauziah, M., Ernyasih & Andriyani. Faktor-Faktor yang Berhubungan dengan Kualitas Tidur pada Remaja Tahun 2022. 2022;7:30-1.
- [3] Bayantari, N. M., Indonesiani, S. H. & Apsari, P. I. B. Regulasi Diri dalam Belajar dan Hubungannya dengan Stres Akademik Pada Mahasiswa Tingkat Pertama Fakultas Kedokteran. *Jurnal Imiah Pendidikan dan Pembelajaran*. 2022;6:609–18.
- [4] Mardiyah, M., Noviana Nasriyanto, E., Mei Winarni, L. & Ridwan, M. Hubungan Insomnia Terhadap Tingkat Konsentrasi Belajar Pada Remaja Di Desa Jati Mulya Kabupaten Tangerang. *Nusantara Hasana Journal*. 2022;2.
- [5] Bachtiar, V. A. & Seborg, P. H. Profil Dan Probabilitas Kejadian Gangguan Durasi Tidur-Persepsi Kualitas Tidur Mahasiswa Kedokteran: Studi Formatif. *Jurnal Pranata Biomedika*. 2022;1:51–51.
- [6] Haryati & Patma Yunaningsi, S. *Faktor Yang Mempengaruhi Kualitas Tidur Mahasiswa Fakultas Kedokteran Universitas Halu Oleo*. 2020. <http://jurnalmedikahutama.com>
- [7] Permatasari, A. N. Hubungan Tingkat Stres Terhadap Kualitas Tidur Pada Mahasiswa Tahun Pertama Dan Tahun Kedua Fakultas Kedokteran UIN Syarif Hidayatullah Jakarta. (Fakultas Kedokteran UIN Syarif Hidayatullah. Jakarta: 2020.
- [8] Wicaksono, B. P. & Choandi, M. Ruang Kreatif Cipinang. *Jurnal Sains, Teknologi, Urban, Perancangan, Arsitektur (Stupa)*. 2020;2:719.
- [9] KEMENKES RI. Laporan Provinsi Jawa Tengah Riskesdas 2018. 2019. https://dinkes.babelprov.go.id/sites/default/files/dokumen/bank_data/20181228%20-%20Laporan%20Riskesdas%202018%20Nasional-1.pdf
- [10] Kamila, A. Psikoterapi Dzikir Dalam Menangani Kecemasan. *Journal Of Psychology And Islamic Science*. 2020;4:40–9.
- [11] Daryono, M. Y. Hubungan Intensitas Zikir Dengan Tingkat Kecemasan Mahasiswa Preklinik Fakultas Kedokteran UIN Syarif Hidayatullah Jakarta. *UIN Syarif Hidayatullah Jakarta*. Jakarta: 2022.
- [12] Nadiaskara, S. N., Myh, E., Asri, E. & Murni, A. W. Pengaruh Zikir terhadap Tingkat Stres Mahasiswa Tahun Ketiga Pendidikan Dokter Universitas Andalas. *Jurnal Ilmu Kesehatan Indonesia*. 2022;3.
- [13] Setyaji, A. B. Hubungan Kualitas Tidur Dan Kebugaran Jasmani Didik Kelas Atas Sd Negeri 1 Purbosari Ngadirejo, Kabupaten Temanggung Jawa Tengah. 2021. https://eprints.uny.ac.id/69007/1/fulltext_akhsan%20bayu%20setyaji_16604221051.pdf

- [14] Salmiah & Kuncara, D. B. Hubungan Kualitas Tidur Terhadap Indeks Prestasi Semester Pada Mahasiswa Fakultas Teknik Universitas Islam Sumatera Utara Pada Tahun 2020. *Jurnal Kedokteran dan Kesehatan-Fakultas Kedokteran Universitas Islam Sumatera Utara*. 2021;20.
- [15] Hall, J. E. & Guyton, A. C. Guyton Dan Hall Buku Ajar Fisiologi Kedokteran. *Sauders Elsevier*. Amerika Serikat; 2019.
- [16] Firdaus, M. R. *Larangan Tidur Berlebihan Dalam Hadis(Kajian Ma'anil Al-Hadith Pada Kitab S}Ah}I>H} Nomor Indeks 230 Dengan Pendekatan Mental)*. 2023 http://digilib.uinsa.ac.id/63205/1/M.%20Rifqi%20Firdaus_E95219085.pdf
- [17] Alawiyah, E. *Manajemen Tidur Dalam Hadis Sunan Abi Dawud (Kajian Hadis Tematik Dalam Perspektif Ilmu Kesehatan)*. 2023 http://digilib.uinsa.ac.id/66026/2/Evayanti%20Alawiyah_E05219009%20OK.pdf
- [18] Meiranny, A. & Chabibah, A. M. Pengaruh Konsumsi Minuman Berkafein Terhadap Pola dan Kualitas Tidur Mahasiswa: A Literatur Review. *Media Publikasi Promosi Kesehatan Indonesia The Indonesian Journal of Health Promotion*.2022;5.
- [19] Sejbuk, M., Mironczuk-Chodakowska, I. & Witkowska, A. M. *Sleep Quality: A Narrative Review on Nutrition, Stimulants, and Physical Activity as Important Factors*. *PUBMED*;2022. doi:10.3390/nu14091912.
- [20] Sherwood, L. Fisiologi Manusia Dari Sel Ke Sistem. *Buku Kedokteran EGC*. Jakarta; 2018.
- [21] Rosemary A. Savage, Nowera Zafar, Sandesh Yohannan & John-Mark M. Miller. Melatonin. *National Library of Medicine* (2024).
- [22] Ahsani, D. N. Tidur Sehat Ala Rasulullah SAW. *Fakultas Kedokteran Universitas Islam Indonesia*. 2023 <https://fk.uui.ac.id/tidur-sehat-ala-rasulullah-saw/>
- [23] KEMENKES. 5 Cara Meningkatkan Kualitas Tidurmu agar Esok Pagi Lebih Bugar.KEMENKES. 2022 https://yankes.kemkes.go.id/view_artikel/1012/5-cara-meningkatkan-kualitas-tidurmu-agar-esok-pagi-lebih-bugar
- [24] KEMENKES RI. Kebutuhan Tidur sesuai Usia. 2018 <https://p2ptm.kemkes.go.id/infographic-p2ptm/obesitas/kebutuhan-tidur-sesuai-usia>
- [25] Mardlatillah, S. D. Konsep Tidur dalam Perspektif Psikologi dan Islam. 2023;7.
- [26] Napoli, N. Tidur Nyenyak Bisa Menambah Usia Hidup Anda Memiliki lima kebiasaan tidur berisiko rendah mungkin memiliki manfaat jangka panjang. *American College of Cardiology*. 2023. <https://www.acc.org/About-ACC/Press-Releases/2023/02/22/21/35/Getting-Good-Sleep-Could-Add-Years-to-Your-Life>
- [27] Cappuccio, F. P., D'elia, L., Strazzullo, P. & Miller, M. A. *Sleep Duration and All-Cause Mortality: A Systematic Review and Meta-Analysis of Prospective Studies Sleep*. 2010: 33.
- [28] Killgore, W. D. S. *Effects of sleep deprivation on cognition*. *Prog Brain Res* 185. 2010;105–29.

- [29] Baglioni, C. *et al.* *Insomnia as a predictor of depression: A meta-analytic evaluation of longitudinal epidemiological studies.* *Journal of Affective Disorders.* 2011; vol 135:10–9. <https://doi.org/10.1016/j.jad.2011.01.011>
- [30] Besedovsky, L., Lange, T. & Born, J. *Sleep and immune function.* *Pflugers Arch* 463. 2012;121–37.
- [31] Buysse Charles F Reynolds III, D. J., Monk, T. H., Berman, S. R. & Kupfer, D. J. *The Pittsburgh Sleep Quality Index: A New Instrument for Psychiatric Practice and Research.* *Psychiatry Res* 28. 1988;193–95.
- [32] National Safety Council & Palupi Widyastuti. *Manajemen Stres.* 2003.
- [33] Mustikyanoro, A. P. J. *Hubungan Aktivitas Olahraga Dengan Tingkat Stres Mahasiswa Fakultas Kedokteran Universitas Lampung.* *Universitas Lampung.* Lampung; 2022.
- [34] Setiabudi Sukma, H., Patimah, S. & Makbulloh, D. *Strategi Manajemen Stres Dalam Perspektif Islam.* *Mahasiswa Pendidikan Agama Islam.* 2023;4: 41–1.
- [35] Kemenkes RI, P. *Gejala Stres.* *KEMENKES.* 2019 <https://p2ptm.kemkes.go.id/infographic-p2ptm/stress/apa-saja-gejala-stres>
- [36] Lovibond, P. F. & Lovibond, S. H. *Depression anxiety stress scale.* *Elsevier Science Ltd* 33. 1994
- [37] Anil Kumar, Puneet Rinwa, Gurleen Kaur & Lalit Machawal. *Stres: Neurobiologi, konsekuensi dan manajemen.* 2013:91–7.
- [38] American Psychological Association. *Stres di Amerika.* 2020.
- [39] Greenwood, J. W. *Managing Executive Stress: A Systems Approach.* *John Wiley, Sons.* Amerika Serikat; 2001.
- [40] Jusman, A. A. *Hubungan Tingkat Stres Terhadap Motivasi Belajar Pada Mahasiswa Tahun Pertama.* 2020 <https://repository.uinjkt.ac.id/dspace/bitstream/123456789/64172/1/AINUN%20AULIA%20JUSMAN-FK%20-%20Ainun%20Aulia%20Jusman.pdf>
- [41] Suhri A, A. *Hubungan Stres Dengan Siklus Menstruasi Pada Di Fakultas Kedokteran Dan Ilmu Kesehatan Alauddin Makassar.* 2022 https://repositori.uin-alauddin.ac.id/21400/1/AINUN%20AMALIAH%20SUHRI_70300117051.pdf
- [42] Chu, B. *et al.* *Physiology, Stress Reaction.* *National Library of Medicine.* Amerika; 2024.
- [43] Al-Shahrani, M. M. *et al.* *The Prevalence and Associated Factors of Academic Stress among Medical Students of King Khalid University: An Analytical Cross-Sectional Study.* *National Library of Medicine.* 2023 doi:10.3390/healthcare11142029
- [44] Rahmayani D, R., Liza G, R. & Syah A, N. *Gambaran Tingkat Stres Berdasarkan Stressor pada Mahasiswa Kedokteran Tahun Pertama Program Studi Profesi Dokter Fakultas Kedokteran Universitas Andalas Angkatan 2017.* *Jurnal Kesehatan Andalas.* 2019;8.

- [45] Prabamurti, G. A. Analisis Faktor-Faktor Pemicu Level Stres Akademik Mahasiswa Kedokteran Universitas Sebelas Maret Surakarta. 2019. doi:10.31227/osf.io/9rw8y
- [46] Taylor, S. E. & Stanton, A. L. *Coping resources, coping processes, and mental health. Annual Review of Clinical Psychology.* vol. 3 377–401
<https://doi.org/10.1146/annurev.clinpsy.3.022806.091520>
- [47] KEMENKES RI. Reaksi Stres ada 2 yaitu positif dan negatif, Bagaimana reaksi stres Sobat Sehat?. *Direktorat P2PTM Kementerian Kesehatan RI.* 2018
- [48] KEMENKES RI. Apa saja 12 Langkah Pengendalian Stres?. *Direktorat P2PTM Kementerian Kesehatan RI.* 2018.
- [49] Muvid, M. B. Zikir Penyejuk Jiwa: Panduan Untuk Membersihkan Hati Dan Membangun Akhlak Mulia. *Alifia Books.* Mojokerto;2020.
- [50] Widiyanti, N. Pengaruh Dzikir Terhadap Kebahagiaan Jama'ah Majelis Ta'lim An-Nahl Cibadak Suradita Tangerang. 2022.
- [51] Nasution, M. Pengaruh Terapi Dzikir Terhadap Penyembuhan Penyakit Hati Di Rumah Sehat Ar-rahman (RSA) Pekanbaru. 2023.
- [52] Kurniawan, A. Tiga Kategori Zikir Kepada Allah. *NUonline* 2013
<https://www.nu.or.id/nasional/tiga-kategori-zikir-kepada-allah-SutTv#:~:text=Pertama%2C%20zikir%20asma%2DNya.,dari%20tiga%20kategori%20zikir%20itu>
- [53] Khoiron, M. Yang Paling Baik, Zikir dalam Hati atau dengan Lisan. *NUonline.* 2019
<https://islam.nu.or.id/syariah/yang-paling-baik-dzikir-dalam-hati-atau-dengan-lisan-vniX8>
- [54] Abidin, M. A. Z. Melanjutkan Berdzikir atau Menerima Tamu, Mana yang Didahulukan?. *NUonline.* 2018 <https://islam.nu.or.id/syariah/melanjutkan-berdzikir-atau-menerima-tamu-mana-yang-didahulukan-QIwWc>
- [55] Susanti, E. 6 Waktu Terbaik untuk Berzikir. *Islam Pos.* 2022 <https://www.islampos.com/waktu-terbaik-untuk-berzikir-253791/>
- [56] JIS. Ini Adab yang Harus Kita Lakukan Saat Berzikir. *JakartaIslamicCenter* (2019).
- [57] Muslim, H. Dzikir-dzikir Setelah Sholat Wajib. *Universitas Ahmad DahlanFakultas Agama Islam.*
- [58] Suwarno, R. W. & Aulassyahied, Q. Buku Saku Tuntunan Doa Dan Dzikir. *Lembaga Pengembangan Studi Islam (LPSI) Universitas Ahmad Dahlan.* Yogyakarta. 2021.
- [59] Syahira Vanida, J. Efektifitas Terapi Dzikir Terhadap Kualitas Tidur. *The Ushuluddin International Student Conference.* 2023;1.
- [60] Nur Anggraieni, W. Pengaruh Terapi Relaksasi Zikir Untuk Menurunkan Stres Pada Hipertensi Esensial. *Jurnal Intervensi Psikologi.* 2014; vol. 6. www.purtierplacenta.com
- [61] Mahmud, D. A. Hubungan Intensitas Zikir Dengan Tingkat Depresi Pada Mahasiswa. 2022.
<https://repository.uinjkt.ac.id/dspace/handle/123456789/64370>

- [62] Kurniasari, N. Hubungan Antara Intensitas Dzikir Dengan Kecemasan Menjelang Ujian Nasional Pada Siswa SMA Di MAN 1 Yogyakarta. *UIN Sunan Kalijaga Yogyakarta*. Yogyakarta. 2016.
- [63] Mustofani, D. Penerapan Uji Korelasi Rank Spearman Untuk Mengetahui Hubungan Tingkat Pengetahuan Ibu Terhadap Tindakan Swamedikasi Dalam Penanganan Demam Pada Anak.
- [64] Sinulingga, A. H. Hubungan Kuantitas tidur Dengan Tingkat Konsentrasi Pada Mahasiswa Stambuk 2014 Fakultas Kedokteran Universitas Muhammadiyah Sumatera Utara Tahun 2017. 2018.
- [65] Adilla, D., Hidayatullah, W. A., Izzatunnisa, R., Pasya, J. A. & Fazhart, M. A. Ingin Sehat dan Bugar? Melalui Terapi Zikir Untuk Peningkatan Kualitas Tidur Pada Mahasiswa. *Journal of Islamic Psychology and Behavioral Sciences*. 2024;2.
- [66] Al-Halaj, Q. M. I. Pengaruh Dzikir Menjelang Tidur Terhadap Kualitas Tidur Lanjut Usia Di Panti Sosial Tresna Wredha Budi Mulia 01 Jakarta Timur. 2014. <https://repository.uinjkt.ac.id/dspace/bitstream/123456789/25630/1/Qoys%20Muhammad%20Iqbal%20Al-Halaj%20-%20fkik.pdf>
- [67] Vanida, J. S. Efektifitas Terapi Dzikir Terhadap Kualitas Tidur. *The Ushuluddin International Student Conference*. 2023;1.
- [68] Wijonarko, Jaya Putra, H. & Arianti, M. Pengaruh Latihan Napas Dalam dan Dzikir pada Penurunan Tekanan Darah Pasien Hipertensi. *Jurnal Keperawatan Bunda Delima*. 2024;6:64.
- [69] Purwanto, S. et al. *The Development and Validity of Mindfulness Dhikr Breathing Therapy For Insomnia*. *Indonesian Journal of Public Health*. 2023;18:382–94.
- [70] Purwanto, S., Ahmad, M., Said, Z., Anganthi, N. R. N. & Zulaekah, S. *Effect of Mindfulness Dhikr Breathing Therapy for Insomniacs on Quality of Life: A Randomized Controlled Trial*. *Islamic Guidance and Counseling Journal*. 2023;6:1–16.
- [71] Safhi, M. A. et al. *The Association of Stress with Sleep Quality Among Medical Student at King Abdulaziz University*. *J Family Med Prim Care*. 2020;1662–67. doi:10.4103/jfmpc.jfmpc_745_19
- [72] Azwar, T. M. K. & Darungan, T. S. Hubungan Tingkat Stres Terhadap Kualitas Tidur Pada Mahasiswa Angkatan 2018 Fk Uisu Di Tahun 2022. *Jurnal Kedokteran Ibnu Nafis*. 2023;12.
- [73] Mhamad Yusfar Syaifuro, K. & Prirahayu, O. Hubungan Tingkat Stres dengan Kualitas Tidur Pada Mahasiswa Tingkat Akhir. *Healthy Journal*. 2021;10:99–108.
- [74] Anggraeni, W. N. Pengaruh Terapi Relaksasi Zikir untuk Menurunkan Stres pada Penderita Hipertensi Esensial. *Jurnal Intervensi Psikologi*. 2014;6.
- [75] Sucinindyasputeri, R., Mandala Citra Indraini, Zaqiyatuddinni, A. & S Aditya, A. M. Pengaruh Terapi Zikir terhadap Penurunan Stres pada Mahasiswa Magister Profesi Psikolog. *Jurnal Ilmiah Psikologi*. 2017;8.