

Conference Paper

Effect of Wudhu on Sleep Quality

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Abstract.

Sleep needs are determined by the duration (sleep quantity), depth of sleep, and what is felt after sleep (sleep quality). Many people often ignore the quantity of sleep and consider it normal when the amount of sleep is less than usual. Poor sleep quantity can cause low concentration and attention, which might result in decreased academic scores. Long-term impacts include an elevated risk of coronary heart disease, obesity, high blood pressure, diabetes, mental stress, stroke, and other causes of death. Wudhu before bed is one of the interventions to improve sleep quality. This study aimed to determine the effect of ablution before bed on the quantity of sleep in the students of the Nurul Huda Mergosono Islamic boarding school in Malang-Indonesia. The participants of this study were 82 Islamic boarding school students recruited through simple random sampling. The instrument used was the One Week Sleep Diary. Participants filled out sleep observation sheets and performed ablution for two weeks. Multiple logistic regression was used to analyze the data. In addition, this study examined factors that affect sleep quality in the broader population. The results showed that most participants had a TST of 5 hours. The participants had difficulty initiating sleep, and it took a long time to fall asleep again when they woke up from sleep at night. The most important factor affecting the quantity of sleep was carrying out ablution before going to bed.

Keywords: sleep quantity, ablutions, sleep disorder

1. Introduction

Individual sleep patterns depend on age, lifestyle, environment, activities, and health conditions. Sleep quantity is the average number of hours of sleep a person needs according to their needs[1]. Experts from the American National Sleep Foundation (NSF) state that the quantity of sleep in adults with sleep duration is 7-9 Sleep quality is a condition that a person goes through to get freshness and fitness when he wakes up from sleep[2]. The need for adequate sleep is determined by the time duration factor

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(sleep quantity), the depth of sleep, and what is felt after sleep (sleep quality)[3]. Adults' sleep duration is at least 7 hours/24 hours to promote health and achieve optimal well-being[4]. However, nowadays, many people often neglect the amount of sleep. The impact of frequent sleep disturbances is coronary heart disease, obesity, high blood pressure, diabetes, mental stress, stroke, and other causes of death[4]. A good amount of sleep affects physical, cognitive, and psychological health. Meanwhile, insufficient or irregular sleep quantity causes the possibility of impaired cognitive, psychological function and worsens physical health[5].

Sleep disturbances may also occur in students who live in Islamic boarding schools[6]. Santri is a group that has much activity, the activities of students who are dense in studying religious and general knowledge have a risk of sleep disturbances, both in terms of poor quality and quantity[7]. Factors that affect short sleep duration and poor sleep quality in adolescents are depression, anxiety, difficulty concentrating, hyperactivity, much work from school, school situations, immune deficiency, poor routines, obesity, and diabetes[8]. The sleep quantity component consists of Total Sleep Time (TST), Wake After Sleep Onset (WASO), Sleep Efficiency (SE), and Sleep Latency (SL) [9]. Teenagers in boarding schools sleeping in one room usually consist of more than four people. Many students can also be a problem for pesantren officials to observe, especially regarding discipline for punctual bedtime. The results of previous studies stated that modifying a dense curriculum can affect sleep disturbances in both quality and quantity of sleep[10]. Sleeping friends and the environment also affect the quality of sleep for teenagers[11].

Sleep disturbances can be treated with several interventions using aromatherapy[12], sleep hygiene[13], spiritual activity in Muslim ablution before going to sleep[14]; [15], and also music[16]. The ablution therapy used stabilizes emotions[17]. Ablution is a direct command from Allah SWT written in the Quran for Muslims, where a person performs cleansing on himself both from the outer and inner aspects by religious advice. Wudhu is one of the processes that can be studied, especially in terms of medical health, which can clean from dirt, viruses, and bacteria and facilitate the regeneration of the mucous membranes in areas exposed to wudu water. It can prevent various diseases that enter the body. Reflection point in the ablution area beneficial for health and psychology, making calm, feeling comfortable, peaceful, serene, happy, keeping and avoiding negative influences, avoiding excessive anger, feelings of anxiety, and hasty attitudes and feelings calm because it makes it easier for the subject to worship every time[18]; [19]; [20]; [21]. The purpose of this study was to observe the effect of ablution on sleep quantity focusing on aspects of TST, SL, SE, and WASO for one week using

the one-week sleep diary instrument carried out on students living in the Nurul Huda Islamic boarding school Malang – Indonesia.

2. METHODS

2.1. Study designs and samples

This randomized controlled trial was conducted at the Nurul Huda Islamic Boarding School in Malang – Indonesia. The number of samples is 82 participants; the determination of the sample with simple random sampling technique uses random picker app. Each individual was given a number; numbers 1-103 were entered into the computer and randomized; the numbers that came out were participants in this study. The sample size was determined using the minimum sample size formula (Lemeshow, 1997), with 82 participants.

2.2. Ethical aspects of the study

This research approval from the Ethics Committee of the Faculty of Medicine, University of Muhammadiyah Malang, and written institutional permission was obtained from the center where the research was conducted. Individuals involved in this study were informed of the research objectives and informed consent, both verbal and written; the research ethics number was No.E.5.a/143/KEPK-UMM/VI/2021.

2.3. data collection

The research data was collected using a One-week sleep diary, and ablution observations were carried out for seven days. When they wake up, the participant must fill out a sleep diary that observes TST, SL, SE, and WASO from their sleep experiences at night. The observation results of sleep quantity compared with the mean average value[1]. In addition, before going to bed, participants had to fill out a list of observations to perform ablution or not for a week. Category 1 if participants perform ablution before going to bed only four days a week and value 2 if participants perform ablution more than four days a week.

2.4. Data analysis

SPSS Statistics 25.0 (IBM Inc., Armonk, NY, USA) for Windows was used for data analysis. The normality of quantitative variables by the group was confirmed using the Kolmogorov-Smirnov test. We also used the Shapiro-Wilk test to test residual normality and Levene's test for homogeneity of variance. The results of data analysis were not normally distributed, so to determine which independent variable had more influence on sleep quantity, multiple logistic regression was used. A P-value less than 0.05 is considered statistically significant

3. Result

Table 1 shows the results of the demographic data of the respondents. Total participants were 82 with a mean age of 22 years (SD = 2.21). The majority of the participants were 62% female, and 55% lived in the boarding house for more than two years. 53% of participants performed ablution before going to bed. The questionnaire filled in by the participants showed that only three participants had normal duration of sleep, 3,7%, but they have percentage of sleep more than 85% more than half . However, participants had presentence of sleep more than 50%. Almost the average participants fell back asleep in the middle of sleep more than the average mean of 67%, and they had difficulty going to sleep 71%.

The results of multiple regression using the enter method, ablution is very influential and significant on SE, SL, and WASO (OR= 4,865, 10,590, 6,544). The duration of the participants' sleep was influenced by the length of stay in the boarding house , OR= 5.099.

Table 1 shows the results of the demographic data of the respondents. The total number of participants was 82, with a mean age of 22 years (SD = 2.21). The majority of participants were 62% female, and 55% had lived in the pesantren for more than two years 55%. The majority of participants for ablution before going to bed were 86.6%. Another observation result found that only 3.7% of participants had typical sleep duration, but 78% had sleep efficiency >85%. Another finding was that almost 67.1% of participants had difficulty initiating sleep, and the majority took more than 30 minutes to get back to sleep again after they woke up from sleep (92.7%).

Table 2 the results of multiple regression using the enter method, ablution is very influential and significant on SE, SL, and WASO (OR= 4,865, 10,590, 6,544). The duration

TABLE 1: Demographic characteristics at baseline. Characteristics (n=82).

Characteristic	f	%
Gender		
Male	31	37.8
female	51	62.2
Age, mean (SD)	21.5	2.21
Stay in Boring School < 2 years >2 years	27 55	32.9 6 7.1
Ablutions ≥ 4x in weeks <4x in weeks	71 11 38 44	46.3 86.6 13.4 53.7
Sleep Parameters TST (haour) ≤ 7 > 7	3 79 77 5	93.9 3.7 ffff 96.3 96.3 6.1
SL (minutes) ≤30 >30	27 55	32.9 67.1
WASO(minutes) ≤ 15 >15	6 76	7.3 92.7
SE (%) ≥85 <85	64 18 54 28	78 22

of the participants' sleep was influenced by the length of stay in the boarding house , OR= 5.099.

TABLE 2: Compare the impact of ablutions and other factors related to sleep quality of participants (N= 82).

Variable Model	Ablutions			Stay in Boring School		Gender	
	OR (95% CI)	p value	OR (95% CI)	p value	OR (95% CI)	p value	
TST	3.26 (1.13-9.39)	0.03	5.09 (1.41-18.39)	0.01	1.61 (0.55-4.73)	0.38	
SL	10.59 (2.82-39.71)	<0.001	0.83 (0.264-2.61)	0.75	0.83 (0.26-2.61)	0.86	
SE	4.87 (1.86-12.75)	0.001	0.47 (0.17-1.28)	0.14	0.94 (0.35-0.35)	0.89	
WASO	6.54 (2.15-19.92)	0.001	0.84 (0.29-2.48)	0.76	0.96 (0.33-2.76)	0.94	

4. Discussion

The purpose of this study was to determine the effectiveness of ablution on sleep quantity. In addition, this study also analyzes demographics (length of stay in boarding schools, gender) and which ablution before bed intervention is the most effective in influencing sleep quantity. The results showed that students have only five hours of sleep per day. They should have spent 7-9 hours of sleep at their teenage years[1]. Every student who lives in a pesantren has a TST less than normal due to the routine of the pesantren, curriculum, demographics and adaptation to the environment[2][3][4]. Changes in sleep patterns to become irregular not only affect concentration, but also affect the body's ability to metabolize properly, and affect the brain such as increasing guard time that exceeds normal limits and not being able to rest for a long time [22].

Students such as santri must be able to divide lecture activities with activities in Islamic boarding schools. Delaying going to bed because they sleep together, activities before bed with roommates are also one of the causes of students' lack of sleep[3].

Another finding in the study showed that students living in boarding schools had difficulty before going to bed (SL) and took a long time to fall asleep. Previous research is contrary to this study, due to solid activity it can make it easier for a person to sleep well and sleep more to maintain a balance of energy that has been expended WASO is a better reflection of sleep fragmentation, respondents who are awake in the middle of their sleep are caused by an increase in the stimulus received by the RAS so that catecholamine hormones are secreted which make them awake or wake up in the middle of their sleep, and vice versa when there is a decrease in the RAS and there will be an increase so that secretion occurs in the brain. Serotonin hormone can cause respondents to fall asleep awake[9]. The majority of respondents were also found to experience a longer than normal WASO duration, and most of them had less than 2 years of living in a pesantren. Adaptation to the environment can affect a person to sleep longer[3]. Environmental temperature can also affect a person to easily wake up from sleep and have difficulty falling asleep again.

Another finding from this study was that although students had a TST of only 5 hours, SL and WASO were mostly more than normal but SE was more than normal. Sleep efficiency leads to deeper, higher quality sleep with fewer disturbances experienced during sleep. At times of stress, there is an increase in the hormones epinephrine, norepinephrine and cortisol hormones that affect the central nervous system, causing a state of wakefulness and increasing alertness in the central nervous system. This can affect the quality of individual sleep. In addition, these hormonal changes also affect the sleep cycle of Non Rapid Eye Movement (NREM) and Rapid Eye Movement (REM) so that people often wake up at night and have nightmares.[2]. Good sleep efficiency, especially for students or students, has a very good effect because it is used as a body recovery after a day's activities, cognitive processing, and memory integration, while inefficient sleep can cause feelings of fatigue and restlessness.

Wudhu is one of the processes that can be studied, especially in terms of medical health which can clean from dirt, viruses, and bacteria and can facilitate the regeneration of the mucous membranes in areas exposed to wudu water so that it can prevent various diseases that enter the body. reflection point in the ablution area. Wudhu water can cool and relax the muscles and nerves of the body, which is very meaningful for the nervous system of the human body. Ablution provides benefits both psychologically and physiologically. On the psychological aspect of ablution can provide peace of mind that

is able to overcome various nervous problems and nervous tension, when the nerves are relaxed, the GABA neurotransmitter will work. In addition, ablution water can seep in the mind and heart can create good emotions. Meanwhile, in the physiological aspect, ablution can be used as a means of cleaning the body from dirt and as relaxation[19]. Performing ablution can be a means of cleaning oneself from dirt before going to bed. When the body is clean, it can improve mood, difficulty getting up in the morning and improve sleep [15][23]. Movement in ablution can also stimulate the vagus nerve, such as when washing the face and gargling with cold water can stimulate the vagus nerve. The vagus nerve is a very important part of the autonomic system, working under one's instincts. The vagus nerve can be likened to a two-way communication system that connects sensations and emotions. The vagus nerve works by influencing chemicals such as dopamine, GABA, and serotonin [15][24]. Cold water rubbed on the head is a technique to stimulate the vagus nerve which can relieve anger and relax the body[25].

5. CONCLUSION

Thus, the researcher can state that theoretically ablution before bed can be beneficial for the quantity of sleep, although it is known in this study that only TST is more influenced by the length of stay of students in the pesantren. For further research, it is expected to use triangulation techniques, namely researchers do not compare data obtained from primary sources, with data obtained from secondary sources such as comparing data obtained from students and interviews with clerics and clerics to ensure the validity of such data, and can use qualitative and qualitative methods. quantitative.

References

- [1] M.M. Ohayon, M.A. Carskadon, C. Guilleminault, and M. V. Vitiello, "Meta-analysis of quantitative sleep parameters from childhood to old age in healthy individuals: Developing normative sleep values across the human lifespan.," *Sleep*. vol. 27, no. 7, pp. 1255–1273, 2004.
- [2] W.K. Rohmah and D.P.S. Yunita, "Determinan kualitas tidur pada santri di pondok pesantren.," *Higeia Journal of Public Health Research and Development*. vol. 4, no. 3, pp. 649–659, 2020.
- [3] M. Sprajcer, D. Mander, G. Rigney, and T. Benveniste, "Sleep in Adolescents Attending Australian Boarding Schools: A Review and Interim Recommendations.," *Australian Journal of Teacher Education*. vol. 46, no. 9, pp. 91–105, 2021.

- [4] E.R. Embree, "Adolescent Sleep Quality: An Exploratory Study of Sleep Complaints and Impacts for Boarding Students from Regional and Remote Communities in Years 7 to 12.," *NASSP Bulletin*. vol. 19, no. 58, pp. 36–40, 1935.
- [5] B. Kozier, "Fundamentals of Nursing.," vol. 1, pp. 1163–1219, 2010.
- [6] Anggita Setya Ludtaningma, *Gambaran Kualitas Tidur Mahasiswa yang Tinggal di Pondok Pesantren Syafi'ur Rohman Jember.* , Jember, 2019.
- [7] S.A. Rani and Y. Wiyatmo, "Development of Conceptual Attainment Student Worksheet to Improve Cognitive and Psychomotor in Physics Instruction.," *2nd International Seminar on Science Education*. pp. 404–409, 2016.
- [8] Potter and Perry, *Fundamental of Nurses.*, 2013.
- [9] W. Hong, J. Liu, J. Pei, and D. Lai, "Studies of subjective sleep thermal comfort and adaptive behaviors in Chinese residential buildings in nine cities.," *E3S Web of Conferences*. vol. 111, no. 201 9, p. 2019.
- [10] M. Akimoto, C. Sekhar, M.P. Bivolarova, et al., "Reviewing how bedroom ventilation affects IAQ and sleep quality.," *ASHRAE Journal*. vol. 63, no. 4, pp. 56–60, 2021.
- [11] D.I. Rifkin, M.W. Long, and M.J. Perry, "Climate change and sleep: A systematic review of the literature and conceptual framework.," *Sleep Medicine Reviews*. vol. 42, pp. 3–9, 2018.
- [12] H.C. Hsu, M.H. Lin, H.F. Lee, C.Y. Wu, C.T. Chou, and S.F. Lin, "Effects of aromatherapy with essential oil massage on the sleep quality of critical care nurses: A randomized controlled trial.," *Complementary Therapies in Clinical Practice*. vol. 43, no. February, p. 101358, 2021.
- [13] S. Lemola, N. Perkinson-Gloor, S. Brand, J.F. Dewald-Kaufmann, and A. Grob, "Adolescents' Electronic Media Use at Night, Sleep Disturbance, and Depressive Symptoms in the Smartphone Age.," *Journal of Youth and Adolescence*. vol. 44, no. 2, pp. 405–418, 2015.
- [14] I. Fani Reza, "Wudu as Islamic Psychotherapy to Improve Sleep Quality in Young Women.," *Journal An-Nafs: Kajian Penelitian Psikologi*. vol. 5, no. 1, pp. 64–75, 2020.
- [15] C. Masyitoh, F. Fini, L. Noor, J. Dailami, S. Nazarwin, and H. Dadang, "ABLUTION BEFORE SLEEP AS A PREVENTIVE THERAPY FOR SLEEP DISORDERS.," *Indonesian Journal of ...* vol. 1, no. 1, pp. 53–60, 2021.
- [16] M. Gangguan and T. Di, "LITERATURE REVIEW: PENGARUH TERAPI MUSIK INSTRUMENTAL TERHADAP KUALITAS TIDUR PADA PASIEN POST OPERASI YANG Abstrak Pendahuluan Menurut WHO dalam Oktaningsih Di Indonesia perawatan post operasi (2018) penelitian di 56 negara dari 192 negara seringkali.," *Perawat Indonesia Persatuan Perawat Nasional Indonesia*. vol. 5, no. 2, pp. 672–683, 2021.

- [17] Z.M. Nor, N.N. Yusoff, F.R.F. Razi, and N.A. Sanusi, "A good night's sleep: A narrative review from Islamic perspectives in relation to modern sciences,," *International Medical Journal Malaysia*. vol. 17, no. Specialissue2, pp. 117–122, 2016.
- [18] A.N.P. Anwar and H.E. Wijaya, "Pengaruh Wudhu Terhadap Agresivitas Pada Mahasiswi Program Studi Psikologi Universitas Islam Indonesia Wudhu Influence Program On Aggressiveness In Students Of Psychology Of Islamic University Of Indonesia,," *Jurnal Psikologi Islam*. vol. 6, no. 1, pp. 75–82, 2019.
- [19] D.C. Sari, "Peranan Hydroterapi Wudhu Pada Pembelajaran Anak Cerebral Palsy,," *Ilmiah Fisioterapi*. vol. 1, no. 1, p. 2018.
- [20] Lela and Lukmawati, "'KETENANGAN': MAKNA DAWAMUL WUDHU (Studi Fenomenologi Pada Mahasiswa UIN Raden Fatah Palembang),," *Psikis: Jurnal Psikologi Islami*. vol. 1, no. 2, pp. 55–66, 2015.
- [21] V. Oktaryanto, R. Rusli, and E. Yudianti, "Peran Terapi Wudhu Terhadap Kestabilan Emosi Klien Pusat Rehabilitasi Narkoba Ar Rahman Palembang,," *Psikis: Jurnal Psikologi Islami*. vol. 5, no. 2, pp. 101–108, 2019.
- [22] A. Galván, "The Need for Sleep in the Adolescent Brain,," *Trends in Cognitive Sciences*. vol. 24, no. 1, pp. 79–89, 2020.
- [23] E.D. Harmoniati, R. Sekartini, and H. Gunardi, "Intervensi Sleep Hygiene pada Anak Usia Sekolah dengan Gangguan Tidur: Sebuah Penelitian Awal,," *Sari Pediatri*. vol. 18, no. 2, p. 93, 2016.
- [24] L. Dreher, "Stimulating the Vagus Nerve -UltraWellness Center -UltraWellness Center,,"
- [25] A. Schwartz, "Natural Vagus Nerve Stimulation | Dr. Arielle Schwartz,,"