Journal Local Therapy
Vol. 03, No. 01, 2024
p-ISSN: 2809-3240; e-ISSN: 2810-0875
pp : 1-5

THE EFFECT OF SOAKING FEET IN WARM WATER ON THE QUALITY OF SLEEP IN ADOLESCENTS

Ahmad Rizky Farras Shihab[1)], Yoni Rustiana K[2)], Marti Rustanti[3)]

[1)] Bachelor of Applied Physiotherapy Student at the Health Polytechnic, Ministry of Health, Surakarta
[2),3)] Lecturer in the Department of Physiotherapy, Health Polytechnic, Ministry of Health, Surakarta

E - mail : ahmadrizkyfarras27@gmail.com

Background: *adolescence is a transitional period where individuals experience physical changes and psychological development starting at the age of 12-20 years. These changes can cause problems that affect development, health and sleep quality. To improve sleep quality, foot bath in warm water* ***Objective:*** *to determine the effect of foot bath in warm water on the quality of sleep in adolescents.* ***Research design:*** *two group pre and post test.* ***Research subject:*** *there were 30 students from the Department of Physiotherapy, Health Polytechnic, Surakarta, who were divided into two groups, where group one was given intervention for 7 consecutive days and the research instrument used PSQI.* ***Research result :*** *the independent t-test showed that there was an influence on adolescent sleep quality.* ***Conclusion :*** *foot bath in warm water has an effect on improving the quality of sleep in adolescents.*

Keywords*: adolescents, sleep quality, warm water foot bath, PSQI*

INTRODUCTION

Indonesia is ranked number four with the largest population in the world. The population of Indonesia in 2020 was 270.20 million people. The comparison of the number of Indonesian men is 136.66 million people or 50.58%. Meanwhile, the number of Indonesian women is 133.54 million or 49.43%. The percentage of the Indonesian population of productive age (15-64 years) is 70.72% of the Indonesian population (BPS, 2020).

According to Minister of Health Regulation No. 25 of 2014 (kemenkes, 2014), Teenagers are residents in the age range 10-18 years. Based on data Badan Kependudukan dan Keluarga Berencana (BKKBN, 2020) In the 2020 population census, the number of teenagers (aged 10-24 years) was 67 million people or 24% of the total population of Indonesia, so teenagers are an important focus of attention in national development. Data Badan Pusat Statistik (BPS, 2020) shows that the number of residents aged 15-24 years in 2020 was 44,079,486 people. The population in Indonesia will continue to increase over time.

Knowing that the number of teenagers is increasing, teenagers as the nation's next generation need to be prepared to become a generation that is healthy spiritually, physically and mentally. Adolescence is a transition period from childhood to adulthood, marked by several physical and psychological changes. The changes experienced by teenagers can cause problems that can affect their development and health in the future.

An important component for intellectual development and growth in adolescents is sleep. Adolescent health problems arise due to lack of sleep. Lack of sleep needs for teenagers will experience various negative things including physical health problems, being prone to accidents, being at high risk of obesity, having difficulty concentrating, impaired memory and learning. Teenagers have different sleep patterns compared to other ages. Because teenagers experience puberty which causes a number of changes that disrupt sleep time. Teenagers often sleep late and wake up early because of school

demands, resulting in excessive sleepiness during the day (Subhan, 2018).

According to National Sleep Foundation (NSF) found that 60% of children under 18 years of age complained of being tired during the day and 15% of them said they were sleepy at school. The NSF recommends that the ideal amount of sleep for teenagers is 8-10 hours per night (Foundation, 2018). If the required amount of sleep time is not met, it can be categorized as a sleep disorder (Trihono et al., 2013). A person's sleep quality can be influenced by several factors, namely: environmental factors, nutritional factors, lifestyle factors, sports activity factors, psychological stress factors (Utami et al., 2021)

The quality of a person's sleep can be seen from satisfaction with their sleep and not experiencing sleep problems. Psychological well-being, daily activities, individual physical abilities, and cognition can directly influence sleep quality (Casagrande et al., 2021). Adequate quality sleep will help sensorimotor function, memory processing, sensorimotor integration, and maintaining concentration. This can vary depending on job demands, social involvement, mental condition, age, and physiological characteristics of each individual. (Quick et al., 2016). Insufficient sleep quality will have an unstable emotional impact, feelings of anxiety, inability to process information in the short and long term, cardiometabolic disorders, and can cause death. (Yazdi et al., 2016).

Treatment when experiencing sleep disorders can be done by soaking the feet in warm water, where this intervention can be done at home, is cost-effective and easy to do. Besides that, the feet are a part of the body that has many thermoreceptors and capillaries. Soaking the feet in warm water can cause rapid peripheral vasodilation (Kuderer et al., 2022). Scientifically, warm water has a physiological impact on the body, namely that blood vessel circulation runs smoothly, the presence of loading factors can increase the strength of muscles and ligaments, thereby affecting the joints. (Zerlina Lalage, 2015). Soaking in warm water 38º-42ºC can relieve pain, maintain skin, heart rate and relaxation. In addition, it has the effect of lowering blood pressure, blood vessel resistance, reducing heart rate and increasing blood flow in the legs. Peripheral blood flow increases and facilitates early sleep resulting in improved sleep quality (Talebi Ghadicolaei et al., 2019).

The research is entitled "The Effect of Footbath on Sleep Quality of the Elderly: A Blinded Randomized Clinical Trial". This research states that soaking feet in warm water at a temperature of 41º-42ºC for 20 minutes before going to bed can have an effect on improving sleep quality in the elderly. (Seyyedrasooli et al., 2013)

Based on the statement above, previous research has shown that soaking feet in warm water before going to bed can improve the sleep quality of the elderly. In this study, researchers used teenagers as subjects because sleep quality affects teenagers' health later in life. Carried out for 7 consecutive days with a soaking time of 10 minutes. Therefore, this study aims to prove "The Effect of Soaking Feet in Warm Water on Sleep Quality in Adolescents".

METHOD

This study used a two groups pre-test and post-test design to determine the effect of soaking feet in warm water on the quality of sleep in teenagers. The research subjects who met the inclusion criteria were 30 people. Divided into 2 groups which are randomized using numbered paper. Group 1 will be given a foot soak in warm water. Group 2 is a control group that was not treated. The research instrument used the Pittsburgh Sleep Quality Index (PSQI) questionnaire which was translated into Indonesian. The research was conducted for 7 consecutive days. Soak the feet in warm water for 10 minutes at a temperature of 40ºC. Shapiro-Wilk Test and Paired t-Test.

RESULTS AND DISCUSSION

1. Subject characteristics by age

The age of the subjects was divided into 4 groups, namely: (1) 18 years old as many as 3 people, (2) 19 years old as many as 13 people, (3) 20 years old as many as 13 people, (4) 21 years old as many as 1 person and this according

to the inclusion criteria. Subject characteristics based on
age can be seen in table 1.

Table 1. Characteristics By Age

Classification Age	Group I		Group II	
	Amount	Percentage	Amount	Percentage
18	1	6,7	2	13,3
19	5	33,3	8	53,3
20	9	60,0	4	26,7
21	0	0	1	6,7
Amount	15	100	15	100

2. Subject characteristics by gender

Subjects based on gender were dominated by 16 women and 14 men. Subject characteristics based on gender can be seen in table 2.

Table 2. Characteristics Based On GENDER

Classification Gender	Group I		Group II	
	Amount	Percentage	Amount	Percentage
Woman	9	60,0	7	46,7
Man	6	40,0	8	53,3
Amount	15	100	15	100

3. Initial state of the research subject

The pre-test results in group I with the foot soaking treatment in warm water obtained a minimum value of 5, a maximum value of 14 and an average value of 9.93 with a standard deviation of 2.789. Meanwhile, in group II where no treatment was given, the minimum score was 4, the maximum score was 13 and the average score was 8.47 with a standard deviation of 2.900. The initial condition of the subject before treatment can be seen in table 3.

Table 3. Initial State Of Psqi Value

Pre-test	Group I	Group II
Minimum	5	4
Maximum	14	13
Average	9,93	8,47
Standard Deviation	2,789	2,900

4. The condition of the subject after treatment

The post-test results in group I with the foot soaking treatment in warm water obtained a minimum value of 4, a maximum value of 10 and an average value of 6.67 with a standard deviation of 1.988. Meanwhile, in group II where no treatment was given, the minimum score was 4, the maximum score was 12 and the average score was 8.60 with a standard deviation of 2.063. The final condition of the subject after being given treatment can be seen in table 4.

Table 4. Final State Of Psqi Value

Pre-test	Group I	Group II
Minimum	4	4
Maximum	10	12
Average	6,67	8,60
Standard Deviation	1,988	2,063

5. Difference in PSQI values before and after treatment

The difference in PSQI measurements can be seen from the data before and after treatment in group I with foot soaking treatment in warm water and group II as control. In group I the average pre-test value was 9.93 and the average post-test value was 6.67 with an average difference of 3.26, while the measurement group II had an average pre-test value of 8.47 and post-test average 8.60 with an average difference of 0.13.

Table 5. Psqi Values Before And After Treatment

	Group I			Group II		
	Pre	Post	Difference	Pre	Post	Difference
Minimum	5	4	1	4	4	0
Maximum	14	10	4	13	12	1
Average	9,93	6,67	3,26	8,47	8,60	0,13

6. Test normality

In this study, the normality test used the Shapiro-Wilk test because the subjects were 30 people or (<50 people). Normality test pre-test group I p= 0.522 and group II p= 0.258, while post-test group I p= 0.042 and group II p= 0.157

Viewed from table 6 on test normality data, that all over data value p> 0.05 . This matter show data normally distributed so can next For test statistics use test parametric .

Table 6. Normality Test Using Shapiro-Wilk Test

Category	Group I	Group II	Information
	Sig.	Sig.	
Pre-test	0,522	0,258	Normal
Post-test	0,042	0,157	Normal

7. Homogeneity test

The homogeneity test in this study used the independent t-test. The results of the pre-test homogeneity test were p=0.169.

Based on table 7, in this study the results of the homogeneity test can be concluded as p>0.05, which means that the pre-test data in both groups have the same variance or are homogeneous.

Table 7. Homogeneity Test Using Independent T-Test

Category	Sig.	Information
Pre-test	0,169	Homogen

8. Pre-post difference test for groups I and II

The difference test in the two groups used a paired sample t-test because the data was normally distributed. The different test results in treatment group I were p=0.000 (p<0.05), which means there was an effect of treatment in the form of soaking the feet in warm water on the sleep quality of teenagers. The results of the difference test in treatment group II were p=0.796 (p<0.05), which means there was no effect because group II was the control group. These results can be seen in table 8.

Table 8. Pre-Post Test Different Test Results For Treatment Group I And Ii

Paired Sample t-Test	Sig.	Information
Group I	0,000	There is a difference
Group II	0,796	No difference

9. Post-test difference between groups I and II

Results of the post-test between treatment groups I and II. In this study, from the results of the independent t-test analysis, the post-test scores for groups I and II obtained a value of p=0.014 (p<0.05). These results indicate that there is a difference in the effect after treatment for groups I and II. These results can be seen in table 9.

Table 9. Post-Test Different Test Results For Group I And II

Post-test	Sig.	Information
Groups I and II	0,014	There is a difference

CONCLUSION

The treatment of soaking feet in warm water for 10 minutes carried out 7 days in a row can improve the quality of sleep in teenagers. Department of Physiotherapy, Surakarta Health Polytechnic, Colomadu District, Karanganyar Regency, Central Java.

STATEMENT CONFLICT INTEREST

(1) the time for carrying out therapy cannot be carried out simultaneously, (2) the limited number of meters affects the implementation of therapy, (3) researchers cannot control the subject's activities outside the research, (4) researchers have not researched the factors that influence the sleep of each individual. each subject.

THANK-YOU NOTE

Thank you to God Almighty, mentors, friends who have helped and research subjects.

REFERENSI

BKKBN. (2020). *Remaja, Ingat Pahamilah Kesehatan Reproduksi Agar Masa Depan Cerah dan Cegah Penyakit Menular Seksual Kesehatan Reproduksi Agar Masa Depan Cerah dan Cegah Penyakit Menular Seksual*. https://www.bps.go.id/indikator/indikator/view_data_pub/0000/api_pub/YW40a21pdTU1cnJxOGt6dm43ZEdoZz09/da_03/3

BPS. (2020). *Jumlah Penduduk Menurut Kelompok Umur dan Jenis Kelamin*. https://www.bps.go.id/indikator/indikator/view_data_pub/0000/api_pub/YW40a21pdTU1cnJxOGt6dm43ZEdoZz09/da_03/3

Casagrande, M., Forte, G., Tambelli, R., & Favieri, F. (2021). The coronavirus pandemic: A possible model of the direct and indirect impact of the pandemic on sleep quality in Italians. *Nature and Science of Sleep*, *13*, 191–199. https://doi.org/10.2147/NSS.S285854

Foundation, N. S. (2018). *School Start Time AndSleep*.https://sleepfoundation.org/sleep-news/school-start-time-and-sleep

Kemenkes. (2014). *Permenkes no 25 tahun 2014*.https://peraturan.bpk.go.id/Home/Details/117562/permenkes-no-25-tahun-2014

Kuderer, S., Vagedes, K., Szöke, H., Kohl, M., Joos, S., Gündling, P. W., & Vagedes, J. (2022). Do ginger footbaths improve symptoms of insomnia more than footbaths with warm water only? – A randomized controlled study. *Complementary Therapies in Medicine*, *67*(November2021).https://doi.org/10.1016/j.ctim.2022.102834

Quick, V., Byrd-Bredbenner, C., Shoff, S., White, A. A., Lohse, B., Horacek, T., Colby, S., Brown, O., Kidd, T., & Greene, G. (2016). Relationships of Sleep Duration With Weight-Related Behaviors of U.S. College Students. *Behavioral Sleep Medicine*, *14*(5), 565–580. https://doi.org/10.1080/15402002.2015.1065411

Seyyedrasooli[1], A., Valizadeh, L., Zamanzadeh, V., Nasiri, K., & Kalantri, H. (2013). The Effect of Footbath on Sleep Quality of the Elderly: A Blinded Randomized Clinical Trial. *Journal of Caring Sciences*, *2*(4), 305–311.

Subhan, F. A. (2018). Hubungan Perilaku Penggunaan Gawai dengan Kualitas Tidur Pada Mahasiswa Keperawatan Semester VI (Enam) di Universitas 'Aisyiyah Yogyakarta. *Jurnal Unisa*, 11. http://digilib2.unisayogya.ac.id/handle/123456789/1015

Talebi Ghadicolaei, H., Heydary Gorji, M. A., Bagheri, B., Yazdani charati, J., & Hadinejad, Z. (2019). The Effect of Warm Footbath on the Quality of Sleep on Patients with Acute Coronary Syndrome in Cardiac Care Unit. *Journal of Caring Sciences*, *8*(3), 137–142. https://doi.org/10.15171/jcs.2019.020

Trihono P P, Djer M.M, Sjakti H A, Hendrarto T W, P. T. (2013). *Best Practices In Pediatrics*.http://fk.ui.ac.id/wpcontent/uploads/2016/01/Buku-PKB-IDAI-Jaya-X.pdf

Utami, R. J., Indarwati, R., & Pradanie, R. (2021). Analisa Faktor Yang Mempengaruhi Kualitas Tidur Lansia Di Panti. *Jurnal Health Sains*, *2*(3), 362–380. https://doi.org/10.46799/jhs.v2i3.135

Yazdi, Z., Loukzadeh, Z., Moghaddam, P., & Jalilolghadr, S. (2016). Sleep Hygiene Practices and Their Relation to Sleep Quality in Medical Students of Qazvin University of Medical Sciences. *Journal of Caring Sciences*, *5*(2), 153–160. https://doi.org/10.15171/jcs.2016.016

Zerlina Lalage. (2015). *Hidup Sehat dengan Terapi Air*.