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The Effect Of Acupoint Sp6 And Sp9 Acupressure Therapy On Improving Sleep Quality In Hypertension Patients

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ABSTRACT

The prevalence of hypertension in Indonesia increases with age, and the symptoms caused can interfere with sleep. This study aims to determine the effect of SP6 and SP9 acupressure acupoint therapy on improving the quality of sleep of hypertensive patients in the Dawan I Klungkung Health Center Working Area. The research method used a quasi-experimental design with pretest and post-test with control group. There were 46 research subjects aged 18-64 years selected using purposive sampling technique. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). The majority of respondents were 48-60 years old and female. Results showed improvement in sleep in the experimental group who received therapy 2 times a week for 2 weeks. Before therapy, 95.7% had moderate sleep and 4.4% had poor sleep and after therapy, 82.6% had good sleep and 17.4% had moderate sleep. The control group did not experience significant changes because they did not receive therapy. The analysis showed that acupressure therapy had a positive effect on the experimental group's sleep quality (Wilcoxon Test value = 0.000), in contrast to the control group (Wilcoxon Test value = 0.144). There was a significant difference between the two groups based on the Mann-Whitney t-test (value = 0.000). Conclusion, acupressure therapy acupoint SP6 and SP9 can improve sleep quality in patients with hypertension. It is hoped that the results of this study can be used as a reference therapy in improving sleep quality.

Keywords: acupressure, sleep quality, hypertension.

Introduction

Hypertension is a serious disease that is not contagious and can be fatal without showing certain symptoms. It is caused by high blood pressure, which is defined as systolic pressure ≥140 mmHg or diastolic pressure ≥90 mmHg ((WHO, 2023). Factors that trigger
hypertension include genetics, age, and lifestyle such as diet, being overweight, lack of exercise, and stress(Indonesian Ministry of Health, 2023). The level of hypertension in the world, especially in low-middle income countries, reached 1.28 billion in those aged 30-79 years according to(WHO, 2023). In Indonesia, 34.11% of the population suffers from hypertension, higher in women (36.85%), with a total of 63.3 million cases and 427,218 deaths (Riskesdas, 2018). In Bali, hypertension rates increased from 21.17% in 2013 to 30.97% in 2018, with Klungkung Regency having the highest prevalence (12.98%) and 4,629 sufferers in 2022(Klungkung District Health Office, 2022).

Uncontrolled hypertension can trigger physiological changes, causing the release of stress hormones which can trigger sleep quality disorders(Nuraini, 2019). The prevalence of sleep disorders in hypertension sufferers worldwide reaches 50- 70%(Wulan et al., 2020). Meanwhile in Indonesia, around 10.3% of the total population experiences sleep disorders due to hypertension(Pramesti et al., 2021). In Bali, the majority of hypertension sufferers experience sleep disorders, reaching 94.9% (Bunganing Eswarya et al., 2023). Based on the results of a preliminary study, the number of hypertension sufferers at the Dawan I Community Health Center increased from 4,600 people in 2021 to 4,672 people in 2023. In addition, 9 out of 12 people with hypertension experienced sleep disorders based on interview results.

The effects of poor sleep include reduced productivity, focus, concentration, and executive function, as well as weakening the immune system and disrupting hormonal balance. In addition, it also has a negative impact on mood, emotions, interpersonal relationships, and overall mental health(Rohmah and Yunita, 2020).

Acupressure can help hypertension sufferers overcome sleep disorders by stimulating acupoints without needles, reduces dependence on sleeping pills, is more cost efficient, and triggers the release of endorphins for a more relaxed sleep.(Suarjana, 2019). Acupressure techniques at points SP6 (Sanyinjiao) and SP9 (Yinlingquan) relax the

body by improving sleep quality, reducing stress, and treating various problems such as menstrual pain and urinary system disorders. Stimulation of these two points also regulates hormones, improves blood circulation, and helps relieve nervous and muscle tension (Wu et al., 2020).

The aim of this research is to determine whether there is an effect of SP6 and SP9 acupoint acupressure therapy on improving sleep quality in hypertension sufferers in the Dawan I Klungkung Health Center working area in 2024.

Research Method

This research used a quasi-experimental pretest-posttest method with a control group carried out at the Dawan Usadha Nursing Independent Practice in Dawan Kaler Village for 2 weeks with a total of 46 samples. The sample was divided into an experimental group (23 people) and a control group (23 people) who met the inclusion criteria as hypertensive patients aged 18-64 years who were taking antihypertensive medication and experiencing sleep quality problems. The sampling method was carried out through purposive sampling. Primary data was obtained through interviews using the sleep quality questionnaire (PSQI), which consists of seven components and produces three categories of sleep quality, namely good (score 0-7), moderate (score 8-14), and poor (score 15-21). The validity of the PSQI

questionnaire was tested with the results of calculated r (0.410-0.831) > r table (0.361), while its reliability was tested with an alpha coefficient of 0.73 indicating a strong relationship.

Results and Discussions

The characteristics of the respondents can be identified based on variables such as age, gender and occupation which are then described in table 1 below:

Table 1 Frequency Distribution of Respondent Characteristics Based on Age, Gender, Occupation

No.	Respondent Characteristics	Experimental Group		Control Group	
		n	%	n	%
1	**Age**				
	38 – 47 years old	0	0	1	4.4
	48 – 60 years	23	100	21	95.7
2	**Gender**				
	Man	4	17.4	11	47.8
	Woman	19	82.6	12	52.2
3	**Work**				
	Doesn't work	5	21.7	4	17.4
	IRT	3	13.0	5	21.7
	Trader	9	39.1	4	17.4
	Laborer	4	17.4	7	30.4
	Self-employed	1	4.4	2	8.7
	Farmer	1	4.4	0	0
	PNS/TNI/POLRI	0	0	1	4.4
	Total	**23**	**100**	**23**	**100**

Based on table 1 above, the majority of respondents were aged 48 – 60 years (91.2%), the majority were women (69%), and the majority were still actively working (60.9%). From these data, it can be concluded that the respondents who experienced the most disturbances in sleep quality were those aged 48 – 60 years, the majority were women, and were still actively working.

StudySulistiyani (2019)found that age affects a person's sleep duration; The older you get, the less time you sleep. This shows that age affects sleep quality, especially in the 55-74 year age group. Physiological changes due to hormones, such as melatonin production, also play a role in regulating a person's sleep patterns. Gender can also affect sleep quality, especially in women who experience hormonal fluctuations during the menstrual cycle, pregnancy, and menopause (Khasanah and Hidayati, 2019).Sumirta and Laraswati (2017)states that people who actively work tend to experience sleep disorders. This is caused by fatigue due to work activities which can make it difficult to sleep. Factors such as irregular work schedules, unconducive work environments, cognitive, emotional, and physical demands can negatively affect a person's sleep quality (Wahid Nur Alfi, 2018).

Based on the opinions of researchers and relevant theories, it is stated that hypertension sufferers are mostly aged 48-60 years with poor sleep quality. This is influenced by physiological changes during aging as well as factors such as gender, especially in women who tend to have poorer sleep quality due to lower stress coping mechanisms and hormonal changes. In addition, jobs that require intense physical activity and irregular work schedules can also disrupt natural sleep patterns, causing sleep disturbances and less than optimal rest.

Table 2 Pretest and Posttest Results of Sleep Quality for Hypertension Sufferers in the Health Center Work Area

Sleep Quality	Experimental Group				Control Group			
	Pre-test	%	Post-test	%	Pre-test	%	Post-test	%
Good	0	0	19	82.6	0	0	0	0
Currently	22	95.6	4	17.4	22	95.6	22	95.6
Bad	1	4.4	0	0	1	4.4	1	4.4
Total	23	100	23	100	23	100	23	100

Based on table 2, it was found that the sleep quality scores in the experimental group were before and after the intervention, as well as the pretest and posttest sleep quality scores in the control group. Before the intervention in the experimental group, one person (4.4%) had poor sleep while 22 people (95.6%) had moderate sleep. After the intervention, 19 people (82.6%) in this group experienced good sleep, while 4 people (17.4%) still had moderate sleep. Meanwhile, in the control group, the pretest results showed that one person (4.4%) had bad sleep and 22 people (95.6%) had moderate sleep. Based on the results of this research, it explains that by providingSP6 and SP9 acupoint acupressure therapycan help improve the sleep quality of hypertension sufferers.

Table 3 Results of Distribution of Mean, Lowest Value, Highest Value, and Standard Deviation of Sleep Quality for Hypertension

	Experimental Group		Control Group	
	Pretest	Post-test	Pretest	Post-test
Average	9.70	6.09	10.35	10.04
Lowest	8	4	8	8
Highest	15	11	15	15
Standard Deviation	1,717	1,621	1,849	1,754
Total	**23**		**23**	

Based on table 3, before being given treatment, the experimental group had an average score of 9.70 (SD = 1.717), with the lowest score being 8 and the highest being 15. After being given treatment, the average score was 6.09 (SD = 1.621), with the lowest score

being 4. and the highest was 11. Meanwhile, the control group had a pretest average of 10.35 (SD = 1,849), with the lowest score being 8 and the highest being 15. The posttest showed an average of 10.04 (SD = 1,754), with the lowest score being 8 and the highest being 15.

Acupressure therapy triggers the release of serotonin which activates the production of the hormone melatonin, regulates sleep rhythm and improves sleep quality. Stimulation of sensory nerves at acupressure points also triggers the release of endorphins, creating feelings of calm and comfort, and creating a close therapeutic relationship.(Majid, 2019). SP6 or called the Sanyinjiao point is an acupoint located 3 cun or 4 fingers from the top of the inner ankle, on the side of the shin bone(Suardana, 2022). Pressure placed on the SP6 acupoint (Sanyinjiao/Three Yin Intersection) has the effect of harmonizing yin and yang, calming the heart and calming the nerves, thus providing a sound sleep. SP6 stimulation has a good effect on the sympathetic adrenal medulla system and minimizes anxiety in sleep disorders. Acupoint SP6 plays a role in sleep regulation by producing increased production of the hormone melatonin which functions to regulate circadian rhythms and initiate sleep, increasing the release of serotonin which is a neurotransmitter that can provide a sense of relaxation and stabilize mood before sleep.(Wu et al., 2020).Research has not been conducted on the use of SP9 to improve sleep quality. Researchers use SP9 as a therapy based on a theory that shows the sedation effect of pressing this acupoint(Wahyudi, 2020).. SP9 emphasis aims to reduce central nervous system function, reduce stress and anxiety, and improve overall sleep quality. Acupoint SP9 can help the body enter deep relaxation, facilitate sleep, and regulate the sleep-wake cycle(Browne, 2023).

Based on researchers' opinions and relevant theories, the majority of hypertension sufferers experience moderate to severe sleep disturbances before receiving treatment, mainly due to common sleep disturbances in adulthood and physical and hormonal changes. Research shows the average daily sleep duration is 5-6 hours, with many having difficulty getting to sleep within 30 minutes, often waking up in the middle of the night or early morning, and waking up to go to the toilet. After receiving acupoint SP6 and SP9 acupressure therapy, it can improve the sleep quality of hypertension sufferers by creating a feeling of relaxation, comfort and calm, as well as reducing complaints such as waking up in the middle of the night or waking up because of going to the toilet.

Table 4 Normality Test Results for Data on the Effect of TherapyAcupressure*Acupoints SP6 and SP9*Towards Improving the Sleep Quality of Hypertension

	Experimental Group			Control Group		
	Statistic			Statistic		
	s	df	Sig.	s	df	Sig.
Total Pretest Results	,884	23	,002	,805	23	,000

Total Post-test Results	,884	23	.012	,897	23	,022

Based on table 4 above, the results show that the normality test was carried out using the Shapiro-Wilk test. The results show that the pretest p-value for the experimental group is 0.002 and the posttest is 0.012. Meanwhile, the p-value of the control group's normality test in the pretest was 0.000 and the posttest was 0.022. This indicates that the data is not normally distributed because the p-value ≤ alpha value (0.05).

Table 5 Hypothesis Test Results for the Effect of TherapyAcupressure*Acupoints SP6 and SP9*Towards Improving the Sleep Quality of Hypertension

	Wilcoxon Test Results	
	Experimental Group	**Control Group**
Z	-4.253b	-1.461b
Asymp. Sig. (2-tailed)	,000	.144

Based on table 5 above, the Wilcoxon test results show a significant difference between the experimental group and the control group. In the experimental group, the Wilcoxon test produced a p-value of 0.000, indicating that H0 was rejected because the p-value was ≤ 0.05. Meanwhile, the control group had a p-value of 0.144, which indicates that H0 failed to be rejected because the p-value was ≥ 0.05.

The response to acupressure therapy can trigger the release of serotonin, a neurotransmitter that carries signals to the brainstem to activate the pineal gland and produce the hormone melatonin. This melatonin then affects the suprachiasmatic nucleus (SCN) in the anterior hypothalamus of the brain, which regulates circadian rhythms. As a result, there is a decrease in time to sleep, waking up in the middle of the night, and an increase in the duration and quality of sleep(Wu et al., 2020). This research is in line with research conducted byKurniadi (2019)who concluded that after applying acupressure, the majority of individuals experienced improvements in sleep quality which were included in the mild category, namely 24 people (77.4%). It can be observed that acupressure affects sleep quality, with the Wilcoxon Test showing a significant p-value of 0.0001. This research is also in line with research conducted byKusumawardani (2019)which concluded that the Wilcoxon Test produced a p-value of 0.000 ($p<0.05$), indicating the influence of acupressure therapy on sleep

quality.

Based on the opinion of researchers and relevant theories, giving acupoint SP6 and SP9 acupressure therapy can help improve sleep quality in hypertension sufferers, before treatment the respondents had moderate and poor sleep quality, and after treatment the respondents had good sleep quality. Acupressure therapy which is carried out based on the principle of healing touch (light touch) shows caring behavior towards a person so that the person feels relaxed, comfortable and calm which contributes to improving the quality of sleep.

Table 6 Results of Differential Tests on the Effect of Acupoint SP6 and SP9 Acupressure Therapy on Improving Sleep Quality in Hypertension

	Mann Whitney Test Results	
	Total Pretest Results	**Total Posttest Results**
Z	-1,234	-5,453
Asymp. Sig. (2-tailed)	,217	,000

Based on table 6 above, the results of the Mann-Whitney Test are obtained with a value of 0.000 in the posttest value, this shows that the p-value is ≤ 0.05. It can be concluded that there is a significant difference in the posttest results between the experimental group that received SP6 and SP9 acupoint acupressure therapy and the control group that did not receive therapy.

This research is in line with research conducted byBaequny and Hidayati (2021)which resulted in the conclusion that using the Mann-Whitney test, a p-value of 0.000 was found. This means that there is a significant difference between the experimental group and the control group. These results also indicate that acupressure can have a positive effect on improving sleep quality. Similar research has also been carried out byMukaroimah (2018)used the Mann Whitney Test statistical test to compare the two groups, and the results showed a significant value of p-value = 0.000, which was smaller than the value of α = 0.05. This means that there is a significant difference between the two groups, with group 1 who underwent acupressure therapy showing a greater improvement in sleep quality than group 2 who did not receive similar treatment.

Based on the opinion of researchers and relevant theories, giving acupoint SP6 and SP9 acupressure therapy can help improve sleep quality in hypertension sufferers from initially having moderate and poor sleep quality, to having good sleep quality. This therapy has an impact on the body's physiology by providing a feeling of comfort and relaxation. Different tests were carried out to measure the quality of sleep in the experimental group and the control group, and the results showed significant differences, where the experimental group was given treatment while the control group was not given treatment.

Conclusion

Sleep quality in hypertension sufferers before being given SP6 and SP9 acupoint acupressure therapy, most respondents had moderate sleep quality (95.6%) and those who had poor sleep quality (4.4%). After being

given SP6 and SP9 acupressure therapy, the experimental group experienced an improvement, namely those who had good sleep quality (82.6%) while in the control group there was no increase in sleep quality because the control group did not receive treatment. Giving acupoint SP6 and SP9 acupressure

therapy to the sleep quality of hypertensive sufferers in the experimental group obtained a Wilcoxon test result of 0.000, meaning that there was an effect of SP6 and SP9 acupressure therapy on improving sleep quality in hypertensive sufferers and in the control group, the score was 0.144, meaning there was no effect on control group, as well as different test results using the Mann-Whitney Test which obtained a result of 0.000, meaning there was a difference in the experimental group that was given SP6 and SP9 acupoint acupressure therapy and the control group that was not given SP6 and SP9 acupoint therapy.

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Conflic of Interest

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Ethical Clearance

This research has received ethical approval from the Chair of the Denpasar Health Research Ethics Commission with number: DP.04.02/F.XXXII.25/0217/2024.

Reference

Baequny, A., & Hidayati, S. (2021). the Effect of Acupressure in Improving the Quality of Sleep in the Elderly. Nurse. Journal of Nursing Update, 1(1). https://doi.org/10.31983/juk.v1i1.8051

Browne, G. (2023). Unlocking the Benefits of SP9 Acupuncture points. 1–10. https://www.allohealth.care/author/seo%3E

Bunganing Eswarya, Putra, IGBGP, & Widarsa, IKT (2023). Description of Sleep Quality of Hypertension Sufferers at Community Health Center II Denpasar Barat. Aesculapius Medical Journal (AMJ), 3(2), 240–246.

District Health Office. Klungkung. (2022). Klungkung District Health Profile in 2022. Klungkung District Health Service, 5, 200.

Indonesian Ministry of Health. (2023). Risk Factors, Prevention and Control of Hypertension. Directorate General of P2P Ministry of Health of the Republic of Indonesia, 1–7.

Khasanah, K., & Hidayati, W. (2019). Sleep Quality for Elderly Social Rehabilitation Center "MANDIRI" Semarang. Journal of Nursing Studies, 1(1), 189–196. http://ejournal-s1.undip.ac.id/index.php/jnursing

Kurniadi, K. (2019). The Effect of Acupressure on Reducing the Scale of Insomnia in the Elderly (Case Study of the Elderly at Posyandu, Nanga Taman District. Soedirman Nursing Journal (The Soedirman Journal of Nursing), 5(1), 13–19. http://repository.unmuhpnk.ac.id/id/eprint/1368.

Kusumawardani, W. (2019). The Effect of Acupressure Therapy on the Sleep Quality of the Elderly at the Pstw Center, Budi Luhur Kasongan Unit, Bantul, Yogyakarta. 6–9.

Majid, YA (2019). The Effect of Acupressure on the Sleep Quality of the Elderly at the Tresna Werdha Ciparay Social Protection Center.

Mukaroimah, N. (2018). The Effect of Acupressure Therapy on the Combination of the Anmian Point and the Neiguan Point on the Sleep Quality of Female Students at

the Darul Ulum Islamic Boarding School in Jombang. 2018, 1–2.

Nuraini, B. (2019). Risk Factors of Hypertension. J Majority, 4(5), 10–19.

Pramesti, AR, Nursing, PS, Health, FI, & Surakarta, UM (2021). Description of the incidence of insomnia in people with hypertension who experience complications or who do not experience complications.

Riskesdas. (2018). 2018 Basic Health Research Results. Indonesian Ministry of Health, 53(9), 1689–1699.

Rohmah, WK, & Yunita, DPS (2020). Determinants of sleep quality among students in Islamic boarding schools. Higeia Journal of Public Health Research and Development, 4(3), 649–659.

Suardana, AEFM (2022). Complementary Therapies During the Pandemic (Made Martini (ed.)). CV. Indonesian Science Media.

Suarjana, W. Week. (2019). The Effect of Acupressure on Insomnia in the Elderly in the Independent Practice of Nurse Latu Usadha Abiansemal Badung. 1–13.

Sulistiyani, C. (2019). Several factors related to sleep quality among students at the Faculty of Public Health, Diponegoro University, Semarang. Journal of Public Health, 1(2), 280–292. http://ejournals1.undip.ac.id/index.php/jkm.

Sumirta, IN, & Laraswati, AI (2017). Factors that Cause Sleep Disorders (Insomnia) in the Elderly. Echo Journal of Nursing, 8(1), 20–30.

Wahid Nur Alfi, RY (2018). The Relationship between Sleep Quality and Blood Pressure in Patients with Hypertension. Periodical Journal of Epidemiology, 6(1), 18. https://doi.org/10.20473/jbe.v6i12018.18-26.

Wahyudi, A. (2020). Treatment of Atopic Dermatitis Using Acupuncture at Yinlingquan (SP9), Quchi (LI11), Lieque (LU7) Points and Herbal Aloe Vera (Aloever (L) Burm.F), Noni (Monrinda citrifolia L) and Turmeric (Curcuma longa L). Airlangga University, Surabaya, September, 1–21. https://doi.org/10.1002/14651858.CD004439.pub2.De

WHO. (2023). Hypertension. 1–6. https://www.who.int/news-room/fact-sheets/detail/hypertension.

Wu, P., Cheng, C., Xiaojun, L., & Yang, L. (2020). Acupoint Combination Effect of Shenmen (HT 7) and Sanyinjiao (SP 6) in Treating Insomnia. Ht 7, 1–29.

Wulan, P., Rohmah, K., & Puspita, YD (2020). Of Public Health Research and Determinants of Sleep Quality in Islamic Boarding School Students. 4(Special 3).