ION Innovation of Nursing Journal
Vol. 01, No. 01, January 2026, pp. 12-17

Effectiveness *Sleep Hygiene* in Control The Patient's Blood Pressure Hypertension Who Experience Sleep Disorders

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ARTICLE INFORMATION

Article history
Received :
January 4, 2026
Revised:
January 20, 2026
Accepted:
January 31, 2026

Keywords
Effectiveness ; Sleep Hygiene; disturbance sleep ; pressure blood ; hypertension

ABSTRACT

The average adult sleep requirement is 7 to 8 hours per day. However, some circumstances cause a person to only be able to sleep less than 7 hours per day . Sleeping less than 6 hours is known to have a negative impact on overall health, one of which is increasing blood pressure. Efforts that can be made to prevent hypertension cost-effectively are with a non-pharmacological approach with sleep hygiene. ***The purpose*** *of this study was to determine the effectiveness of sleep hygiene in controlling blood pressure in hypertensive patients who experience sleep disorders.* ***The research method*** *used in this study was quantitative with a quasi-experimental method, with a one-group pre-posttest design. Where measurements were taken three times, namely pre-during and post-intervention . Population in study This is all patients who suffer hypertension in the PKM Tamalanrea area which experienced disturbance sleep and ready become respondents , with amount sample of 38 respondents . Respondents Then given intervention in the form of sleep hygiene guide consisting of of the 8 activities that must be done done every day during three week .* ***Research results*** *show that part big respondents experience decline pressure blood after two Sunday practicing sleep hygiene where difference between before sleep hygiene is carried out with two Sunday after that is 12.97mmHg. p value based on repeat test Annova is 0.001<α=0.005* ***Conclusion*** *n in study This is sleep hygiene can made one of alternative For control pressure blood in patients hypertension . So that intervention This Can made one of procedure in handler hypertension .*

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1. Introduction

An estimated 1.28 billion adults aged 30-70 years worldwide suffer from hypertension, which is a non-communicable disease that can cause death. Most hypertension sufferers live in low- and middle-income countries. Therefore, this is one of the global targets for non-communicable diseases to be reduced by 2030 (1) . In Indonesia, the incidence of hypertension is hypertension based on survey Indonesia's health coverage (SKI) in 2023 will reach 34.5% of the population aged over 18 years . The province with the highest incidence of hypertension is Kalimantan and the lowest is Papua (2) . The causes of hypertension apart from lifestyle and family history (3) (4) , hypertension can also be caused by lack of sleep. The sleep requirement for adults

is 7 to 8 hours a day. However, some circumstances cause a person to only be able to sleep less than 7 hours a day such as lifestyle, stress, *jet lag* , shift work, and other sleep disorders .

Quality good sleep own good impact For pressure blood , because moment sleep t blood pressure will decrease. Habit Sleep with short duration associated with hypertension, especially in middle age. Insomnia with objective short sleep duration is also associated with an increased risk of hypertension. (5) . Sleeping less than 6 hours is known to have a negative impact on overall health, one of which is increasing blood pressure, commonly known as hypertension, this can also increase the possibility of heart disease and become a risk factor for stroke (6) (7) . Both short sleep duration and long sleep duration are believed to be dangerous for preventing hypertension (8) although short sleep time consistently has a closer relationship with the risk of hypertension in women compared to men, in adults (9) .

Change intervention style life that can done For repair quality frequent sleep done including cognitive behavioral therapy, self-hypnosis, self-relaxation training, Tai Chi Qigong, moderate intensity aerobic training, and physical activity programs . (10) . Hypertension is degenerative disease that is not Can healed , but Can controlled and enforced lifetime live . So that patient with hypertension need cheap and easy intervention done . one of them *sleep hygiene* cost *-effective* with a *non-pharmacological approach* (11) (12) .

There have been many research conducted about connection between influence *sleep hygiene* with decline quality sleep , but part big only use method *cross sectional* and with questionnaire without observation . So that change pressure blood only seen in two measurements . So that No visible change in Long -term . Therefore, this study formulated whether *sleep hygiene* is effective in controlling blood pressure in hypertensive patients who experience sleep disorders.

2. Methods

The research method used in this study is quantitative with a *quasi-experimental method,* with *a one-group pre-posttest design* . Where measurements are carried out three times, namely *pre- , during, and post-intervention* with the aim of determining the effectiveness of *sleep hygiene* in controlling blood pressure in hypertensive patients who experience sleep disorders. This study will be conducted at one of the community health centers in Makassar, namely the community health center. Tamalanrea Makassar in July 2025. The population in this study were all hypertension patients in the working area of the Tamalanrea Makassar Community Health Center. Where moment study ongoing There were 151 patients . The sample consisted of patients who met the research inclusion criteria, namely patients with sleep disorders who would be screened using the modified PSQI (*Pittsburg Sleep Quality Index) instrument* , patients aged 25-55 years, and those willing to be respondents. with amount A sample of 38 respondents was used. The sampling technique used was random sampling, which means that the samples were taken randomly. Bivariate analysis was conducted using a general linear model test to determine changes in patient blood pressure after *sleep hygiene was implemented* for 2 weeks .

Study done for 2 weeks Where measurement pressure blood done before intervention , 1 week after intervention , and after 2 weeks intervention . For ensure

patient experience disturbance sleep , before done intervention done screening quality Sleep with use instrument PSQI modification . Modification This is results study in thesis writer Where produced more comprehensive PSQI assessment easy in filling it and not reduce content from assessment The original PSQI , namely consists of from seven domains, with mark *Cronbach's alpha* was 0.91. Respondent it is said experience disturbance Sleep If get score <5. Respondents Then made timetable Sleep as guide For perform sleep hygiene. The guide in form table consisting of from sheet checklist containing eight activity that is get up Sleep in a way regular , sleep in a way regular , not consume alcohol , no consume caffeine , no Sleep afternoon , take a warm shower 2 hours before sleep , create room comfortable sleep , and eat nutritious food . For keep the patient do intervention with right , family given not quite enough answer as supervisor . Researcher will take sheet observation every once a week and also bring sheet new observations at a time measure change pressure blood patient .

3. Results

Table 1. Quality Sleep patient based on PSQI modification

Variables quality Sleep	N (38)	%
Sleep Duration		
>7 Hours	7	18.4
6-7 hours	11	28.9
5-6 hours	14	36.8
<5 hours	6	15.8
Subjective quality Sleep		
Very good	3	7.9
Enough Good	6	15.8
Not good	18	47.4
Very bad	11	28.9
Sleep Latency		
<15 minutes	2	5.3
16-30 minutes	10	26.3
31-60 minutes	22	57.9
>60 minutes	4	10.5
Sleep Efficiency		
>85%	4	10.5
75-84%	7	18.4
65-74%	14	36.8
<65%	13	34.2
Sleep Disturbance		
0	3	7.9
1-3	9	23.7
4-6	16	42.1
7-9	10	26.3
Sleep Medication		
No Once	3	7.9
Once a week	9	23.7
2-3 times a week	18	47.4
>3 times a week	8	21.1

Daytime dysfunction		
No Once	5	13.2
Once a week	20	52.6
2-3 times a week	11	28.9
>3 times a week	2	5.3

Based on table on seen that part big patient experience disturbance sleep , where for partial sleep duration big patient only sleep 5 to with 6 hours a day namely 36.8% Then For subjectivity Sleep part big not enough Good namely 47.4% next for sleep latency , namely time required somebody to really fall asleep since lie down until Correct Correct asleep , partly respondents takes 31-60 minutes For Correct Correct asleep . While the patient's sleep efficiency part big is 65-74% , namely 36.8%. Average sleep disturbance patients 4-6 times in a day with presentation patient namely 42.1%. and patients who use sleep medication 2-3 times a week there are 47.4% and the average experience disturbance daily consequence not enough sleep once a week namely 52.6%.

Table 2. Respondents' PSQI scores

Variables quality Sleep	Mean / SD	Min-Max
Sleep Duration	1.50/0.980	0-3
Subjective quality Sleep	1.97/0.885	0-3
Sleep Latency	1.74/0.724	0-3
Sleep Efficiency	1.95/0.985	0-3
Sleep Disturbance	1.87/0.906	0-3
Sleep Medication	1.82/0.865	0-3
Daytime dysfunction	1.26/0.760	0-3
Modified PSQI Total Score	10.87/2.538	6-15

In the table on seen that based on total respondent score all in category experience disturbance Sleep Where based on score assessment PSQI modification is said experience disturbance Sleep If score the total is > 5, and it is said No experience disturbance Sleep if ≤ 5.

Table 3. Effectiveness of sleep hygiene in control pressure blood patient hypertension who experience disturbance Sleep

Repeat ANOVA Test Results	Mean ± SD	df	p-value
Systolic Blood Pressure before sleep hygiene	163.76 mmHg ± 12.712	21,288	<0.001
Pressure blood systole 1 week sleep hygiene	159.71 mmHg ± 16.005		
Systolic Blood Pressure 2 weeks sleep hygiene	150.79 mmHg ± 13.870		

On the results research conducted with using the *repeated ANOVA* test , it was obtained p value = 0.001 <α = 0.05 so sleep hygiene is considered effective in change

pressure blood patient hypertension . Where is the difference pressure blood systole before and after Sunday second is 12.97 mmHg.

4. Discussion

Good sleep habits are essential for controlling blood pressure, as sleep deprivation or poor quality sleep, especially less than 6 hours or more than 9 hours, increases the risk of hypertension by activating the stress response, increasing cortisol, and disrupting the body's natural decrease in blood pressure during sleep. (13) . Intervention studies show that sleep habits enough and less associated with higher blood pressure (14) .

Short sleep habits among workers with time Shift work can increase the risk of hypertension by disrupting circadian rhythms and causing circadian misalignment. (16) . The suprachiasmatic nucleus, which controls endogenous circadian rhythms, can become metabolically flat and arrhythmic due to restricted sleep and chronic inverted behavioral cycles that are out of sync with the light/dark cycle. 24 hours. In addition, short sleep and shift work are associated with activities at unconventional circadian times that cause desynchronization between the master clock in the brain and the peripheral clocks in organs, thus creating a state of metabolic dysfunction that triggers hypertension. (17) .

In the research This change highest before and after intervention is 12.97 mmHg, so Not yet Can it is said meaningful . Change pressure meaningful blood is 20 mmHg for pressure blood systole and 10 mmHg for pressure blood distol (15) . however If based on mark significance results study This it is said meaningful . So that Still need study more deep furthermore .

Study This done with gather respondents who have disturbance sleep , until No own comparison with respondents who have quality good sleep . So that No seen difference change pressure blood from second group . For study furthermore expected For do study with use two group different .

5. Conclusion

Sleep hygiene Not yet Can it is said effective in control pressure blood , especially in patients hypertension who experience disturbance sleep , even though mark significance is 0.001, however change in a way clinical only 12.97 mmHg. Therefore That study This need study Furthermore .

Author's Contribution Statement:

Maryam Jamaluddin ; composed draft research , data collection , data analysis , and compilation report research and articles For external . Afriani ; taking care of permission research , help data collection . Sitti Nurbaya ; helping data collection , editing and editing.

Acknowledgements : Thank you love to party health centers that have help and make things easier researchers during in study ongoing. And not forget also to Friend of the research team who have Work hard in study this . Thank you love to the Nani Institute Hasanuddin who has give chance For Keep going develop to the lecturer in carry out three pillars college tall .

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