

Review Article

Open Access

Relationship Between Sleep Quality and Blood Pressure Pre Posterior Vitrectomy Patient

Jenita Doli Tine Donsu*, Harmilah, and Rosa Delima

Department of Nursing Poltekkes Ministry of Health Tata Bumi Street 3 st, Banyuraden, Gamping, Sleman, Yogyakarta, Indonesia

ABSTRACT

Background: Sleep patterns have the highest influence on the incidence of hypertension compared to other variables, namely age and gender. The delay in elective surgery was mostly due to medical factors and mostly due to acute changes in cardiovascular and respiratory functions, abnormal laboratory values and patients refusing surgery. In patients with eye disease, especially in the retina with a Posterior Vitrectomy surgery plan, patients often encounter comorbidities such as hypertension. Incidents of cancellation of elective eye surgery on the day of surgery at the National Eye Center of Cicendo Eye Hospital are also common, especially for reasons of hypertension.

Objective: The purpose of this study was to determine the relationship between sleep quality and blood pressure of pre-Posterior Vitrectomy patients at the National Eye Center at Cicendo Eye Hospital, Bandung.

Methods: The research method used in this research is analytic observational with cross sectional design. Sampling was carried out at the National Eye Center, Cicendo Eye Hospital, and Bandung. The sampling technique used purposive sampling with a total sample of 114 people. Statistical test with Chi Square Test using SPSS.

Result: The results show a p value of 0.003 where the result is smaller than 0.05. From these results, it can be concluded that there is a relationship between the two variables, namely "Sleep Quality" with "Blood Pressure" pre-Posterior Vitrectomy patients at the National Eye Center of Cicendo Eye Hospital Bandung.

Conclusion: There is a relationship between sleep quality and blood pressure in pre-posterior vitrectomy patients at the National Eye Centre at Cicendo Eye Hospital, Bandung.

*Corresponding author

Jenita Doli Tine Donsu, Department of Nursing, Poltekkes Ministry of Health Yogyakarta, Indonesia.

Received: October 26, 2023; **Accepted:** November 03, 2023; **Published:** November 27, 2023

Keywords: Sleep quality, blood pressure, pre-Posterior Vitrectomy

Introduction

The incidence of cancellation of elective eye surgery on the day of surgery at the National Eye Center, Cicendo Eye Hospital is also common, especially for reasons of hypertension. In patients with eye disease, especially in the retina, who are planning a Posterior Vitrectomy operation, patients are often found with comorbidities such as hypertension [1,2]. Patients with retinal problems who will have surgery must have their blood pressure controlled first, in order to avoid risks in the anesthesia process and the results of the operation. The total number of Posterior Vitrectomy patients in 2021 is 1658 patients, with an average of 139 patients per month.

Based on the data obtained by researchers, researchers are interested in conducting research on "The Relationship between Sleep Quality and Blood Pressure in PrePosterior Vitrectomy Patients".

Method

The research method used in this research is analytical observational, with a cross sectional design. Observational Analytical Methods or Analytical Surveys are surveys or research that explore how and why these health phenomena occur. Then carry out a dynamic analysis of the correlation between phenomena or between risk factors and effect factors.

Results

Respondent Characteristics

Table 1: Characteristics of respondents based on gender and age of pre-posterior vitrectomy patients at the National Eye Center, Cicendo Eye Hospital

No	Characteristics	Respondent f	(%)
1	Gender		
	a. Man	65	57
	b. Woman	49	43
	Total	114	100
2	Age		
	a. 18-25 years	8	7,0
	b. 26-35 years	9	7,9
	c. 36-45 years	13	11,4
	d.> 45 years	84	73,7
	Total	114	100

The characteristics of the respondents above can be seen that the gender of the respondents is dominated by male, 65 (57%) while there are 49 female respondents (43%). Based on age, there were 84 respondents (73.7%) dominated by respondents aged more than 46 years.

Sleep Quality

Table 2: Sleep Quality Categories (PSQI) of Respondents from Pre-Posterior Vitrectomy Patients

Distribution of Respondents		
Kualitas tidur (PSQI)	f	(%)
a. Good	33	28,9
b. Bad	81	71,1
Total	114	100

Based on table 2, sleep quality (PSQI) was dominated by poor sleep quality as many as 81 respondents (71.1%) while only 33 respondents (28.9%) had good sleep quality.

Blood Pressure

Table 3: Blood pressure categories of patient respondents before Posterior Vitrectomy

Distribution of Respondents		
Blood Pressure	f	(%)
a. No Hypertension	42	36,8
b. Hypertension	72	63,2
Total	114	100

Based on table 3, the blood pressure of respondents was dominated by blood pressure in the "Hypertension" category, 72 respondents (63.2%), while those in the No Hypertension category were 42 respondents (36.8%).

Table 4: Relationship between Sleep Quality and Blood Pressure in Pre- Posterior Vitrectomy

Blood Pressure								
Sleep Quality	No Hipertension		Hipertension		Total		P value	OR
	f	%	f	%	f	%		
Good	1	57,	1	42,	33	10		
	9	6	4	4		0	0,0	3,4
Bad	2	28,	5	71,	81	10	03	22
	3	4	8	6		0		
Total	4	36,	7	63,	11	10		
	2	8	2	2	4	0		

Based on table 4, the cross-tabulation results show a p value of 0.003, which is smaller than 0.05. From these results it can be concluded that there is a relationship between the two variables, namely "Sleep Quality" and "Blood Pressure" in pre- posterior vitrectomy patients at the National Eye Center, Cicendo Eye Hospital, Bandung. Then, from the results of the analysis, it was obtained that OR= 3.422, meaning that pre-Posterior Vitrectomy patients at the National Eye Center, Cicendo Eye Hospital who had poor sleep quality had a 3.4 times higher risk of experiencing high blood pressure compared to those who had good sleep quality. Based on table 4, the cross-tabulation results show a p value of 0.003, which is smaller than 0.05. From these results it can be concluded that there is a relationship between the two variables, namely "Sleep Quality" and "Blood Pressure" in pre- posterior vitrectomy patients at the National Eye Center, Cicendo Eye Hospital, Bandung. Then, from the results of the analysis, it was obtained that OR= 3.422, meaning that pre-Posterior Vitrectomy patients at the National Eye Center, Cicendo Eye Hospital who had poor sleep quality had a 3.4 times higher risk of experiencing high blood pressure compared to those who had good sleep quality.

Discussion

According to Pitarra (2020), factors that can increase the risk of developing retinal disease include being aged 40 years and over, having an eye injury, having a family history of retinal disease, suffering from chronic diseases, such as diabetes or hypertension [3,4].

According to Djie (2020) the risk of experiencing high or low blood pressure can increase with age, especially in people over 65 years old.5 Based on table four, the majority of respondents are over 45 years old, including the elderly, with a total of 84 respondents. (73.7%), characteristics of pre- posterior vitrectomy patients, the majority of whom were more than 45 years old According to Djie (2020), in general the factors that influence blood pressure are stress, age, gender, genetics, race, obesity or excess body weight, salt consumption, potassium consumption, alcohol consumption, physical activity, smoking, certain medications, medical conditions certain [5-7].

In general, most of those at risk of developing hypertension are men at the South Alalak Community Health Center and the majority often experience signs of hypertension in their late thirties and above. This is because the blood vessels are stiff, blood pressure will increase, so men are more susceptible to hypertension, this is due to hormonal problems, while women tend to be less at risk of developing hypertension if they have not yet reached menopause [8-11].

Blood pressure in men on average has a higher diastolic rate compared to women at all ages and men also have the highest prevalence rate for hypertension. Men have the highest incidence of cardiovascular cases at all ages. Based on the table of four characteristics of respondents, it can be seen that the gender of the respondents is dominated by male, 65 (57%) while female respondents are 49 (43%) [12-15].

Based on the data in this study, it illustrates that there is a relationship between age or age, gender and a person's risk of developing retinal disease. This is because as age increases, a degenerative process occurs in the cells of the human body and this risk factor increases because men tend to have unhealthy lifestyles such as smoking or bad sleeping habits or staying up late because work or just habit [15,16].

Good quality sleep can also improve an individual's quality of life. Not only that, quality sleep can provide several important benefits for the body. Factors that influence sleep include illness, environment, motivation, fatigue, drugs, alcohol and emotional stress [17,18].

This study explained that the majority of respondents had sleep quality (PSQI) which was in the poor category, namely 81 respondents (71.1%) while only 33 respondents (28.9%) were categorized as good. In accordance with this statement, illness is one of the factors that affects sleep, so that sleep quality becomes poor. Pre- posterior vitrectomy patients with problems in the form of eye disease in the retina usually have comorbidities [18,19].

Physically, sleep disturbances in pre- posterior vitrectomy patients are due to having experienced many health problems and psychologically there is a decrease in motivation as well as due to chronic illness in the form of visual impairment. Impaired sleep quality can also arise from environmental factors faced by patients in the form of the effects of hospitalization during pre-operative care [20-22].

Blood Pressure

Hypertension can cause blood vessels to thicken in the retina. The thickening that occurs can trigger narrowing of the blood vessels which inhibits blood flow to the retina. Factors that can increase the risk of developing retinal diseases include being aged 40 years and over, having an eye injury, having a family history of retinal disease, suffering from chronic, such as diabetes or hypertension [1,2].

In this study, based on the blood pressure category, the majority (63.2%) of respondents were in the hypertension category. In accordance with Lusiani and Pittara's statement, hypertension has a big risk of thickening of the blood vessels in the retina, so that this thickening further worsens problems in the retina, causing hypertensive retinopathy [1,2].

Research Result

The results of statistical tests with chi square show a p value of 0.003, which is smaller than 0.05. Based on these results, it was concluded that there was a relationship between the two variables, namely "Sleep Quality" and "Blood Pressure" in pre- posterior vitrectomy patients at the National Eye Centre, Cicendo Eye Hospital, Bandung. Based on the results of the analysis, OR=3.422 was obtained, meaning that pre- posterior vitrectomy patients who had poor sleep quality had a 3.4 times higher risk of developing hypertension compared to those who had good sleep quality. The results of this study are in line with several previous studies,

that sleep patterns have the highest influence on the incidence of hypertension compared to other variables, namely age and gender. Not only that, but the risk of suffering from hypertension in people who have poor sleep patterns is 9.022 times greater than in people who have good sleep patterns [23,24].

Good quality sleep can reduce the risk of blood pressure problems in sufferers with hypertension. Problems with blood pressure, if you have hypertension, can be the cause of cancellation of surgery for pre- operative patients, especially for pre- posterior vitrectomy, especially in patients over 45 years old and male [25-28].

Conclusion

Most pre-posterior vitrectomy patients are included in the hypertension category. In this regard, there is a relationship between blood pressure and sleep quality, where poor sleep quality can aggravate hypertension, thereby inhibiting blood flow to the retina.

References

1. Lusiani M (2019) Retinopati Hipertensi - Penyebab, Gejala, dan Penanganannya. Klinik Mata Nusantara.com. https://www.klinikmatanusantara.com/id/ketahui-lebih-lanjut/info-kesehatan-mata-dari-kmn-eyecare/artikel/retinopati-hipertensi-penyebab-gejala-dan-penanganannya/#_ Accessed 18 June 2022
2. Fadilah, RN, Rindarwati AY (2022) Pengaruh Edukasi Terapi Non Farmakologi pada Hipertensi. Jurnal Ilmiah Kesehatan Delima 3: 117-121.
3. Pittara (2020) Penyakit Retina. Alodokter. <https://www.alodokter.com/penyakit-retina>.
4. Setyandriana Y. (2019) Vitrektomi pada Pasien dengan Retinopati Diabetik. Mutiara Medika: Jurnal Kedokteran Dan Kesehatan.10: 80-85.
5. Djie, A. (2020). Sederet Faktor yang Mempengaruhi Tekanan Darah Anda. Sehatq. <https://www.sehatq.com/artikel/kenali-dan-atur-faktor-yang-mempengaruhitekanan-darah>.
6. Hafiez Amanda, dkk (2017). Hubungan Kualitas Tidur Dengan Tingkat Kekambuhan Hipertensi Pada Lansia Di Kelurahan Tlogomas Kota Malang: Nursing News 2: 437-447. <https://publikasi.unitri.ac.id/index.php/fikes/article/view/680> Accessed 05 February 2022.
7. Unger, T, Borghi, C, Charchar, F, Khan, N A, Poulter, N R, (2020) International Society of Hypertension Global Hypertension Practice Guidelines. Hypertension 7:1334–1357.
8. Van Schoonhoven, A V, van Asselt ADI, Tomaszewski M, Patel P, Khunti K, et al. (2018) Cost-utility of an objective biochemical measure to improve adherence to antihypertensive treatment. Hypertension 72: 1117–1124.
9. Todd, O M., Wilkinson, C, Hale, M, Wong, N L., Hall, M, et al. (2019) Is the association between blood pressure and mortality in older adults different with frailty? A systematic review and meta-analysis. Age Ageing 48: 627–635.
10. Tokunou, Ando, S I. (2020) "Recent advances in the management of secondary hypertension-obstructive sleep apnea," Hypertension Research 43: 1338–1343.
11. Oktavia E dkk (2021) The Relationship between Gender, Physical Activity and Diet with the Incident of Hypertension in the Community in the Working Area of the South Alalak Health Center, Banjarmasin City in 2021. <http://eprints.uniska-bjm.ac.id/8240/1/Artikel%20Elisa%20Oktavia%283%29.pdf>.
12. Ritscher S, Georges C, Wunder C, Wallemacq P, Persu A, et al. (2020) Assessment of adherence to diuretics and β -blockers

- by serum drug monitoring in comparison to urine analysis. Blood Press 29: 291-298.
13. Song JJZ Ma, J Wang, LX Chen, JC Zhong (2020) Gender differences in hypertension. Journal of Cardiovascular Translational Research 13: 47-54.
 14. Peeters L.E.J, Feyz, L, Boersma E, Daemen J, van Gelder, et al. (2020) Clinical applicability of monitoring antihypertensive drug levels in blood. Hypertension 76.
 15. Pugh P. J. Gallacher, and N. Dhaun. (2019) "Management of hypertension in chronic kidney disease," Drugs 79: 365–379
 16. Ramakrishnan S.G, Zachariah K. Gupta, J. Shivkumar Rao P.P. Mohanan et al. (2019) "Prevalence of hypertension among Indian adults: results from the great India blood pressure survey," Indian Heart Journal 71: 309–313.
 17. Cana Joshua Metta (2020) Quality Sleep and Psychological Health: P2TKP Sanata Dharma University Yogyakarta <https://usd.ac.id/pusat/p2tkp/tidur-berkualitas-dan-kesehatan-psikologis/>
 18. Priscilia (2022) Vitrectomy. Alomedica <https://www.alomedika.com/tindakan-medis/mata/vitrektomi/teknik>.
 19. Kim A (2022) Pars Plana Vitrectomy. In: eyewiki. American Academy of Ophthalmology [https://eyewiki.aao.org/Pars_Plana_Vitrectomy#:~:text=Pars%20plana%20vitrectomy%20\(PPV\)%20is,in%20a%20controlled%2C%20closed%20system](https://eyewiki.aao.org/Pars_Plana_Vitrectomy#:~:text=Pars%20plana%20vitrectomy%20(PPV)%20is,in%20a%20controlled%2C%20closed%20system).
 20. Lawson A.J, Hameed M.A, Brown R, Cappuccio F.P, George S, et al. (2020) Nonadherence to antihypertensive medications is related to pill burden in apparent treatment-resistant hypertensive individuals. Journal Hypertens 38: 1165–1173.
 21. Lange S, Koyanagi A, Rehm J, Roerecke M, Carvalho, A.F (2020) Association of Tobacco Use and Exposure to Secondhand Smoke With Suicide Attempts Among Adolescents: Findings From 33 Countries 22: 1322-1329.
 22. Astuti (2019) Be aware of the impact of lack of sleep on health. sardjito.co.id <https://sardjito.co.id/2019/10/30/waspadai-dampak-kurang-tidur-terhadap-kesehatan/>
 23. Bjurström, M. F, Irwin, M. R, Bodelsson M, Smith, M. T, & Mattsson-Carlsson N. (2021) Preoperative sleep quality and adverse pain outcomes after total hip arthroplasty. European journal of pain (London, England) 25: 1482– 1492. <https://doi.org/10.1002/ejp.1761> Accessed 10 July 2022
 24. Bastola P, Bastola S (2023) Hypertensive Retinopathy among Patients with Hypertension Attending the Department of Ophthalmology in a Tertiary Care Centre: A Descriptive Cross-sectional Study. Journal of Nepal Medical Association 61: 584– 587.
 25. Pradeep, T & Pius, C (2022) A Rare Case of Spontaneous Sub Retinal Haemorrhage Associated with Idiopathic Intracranial Hypertension. International Journal of Retina (IJRETINA) 6: 51-56.
 26. American Academy of Ophthalmology Staff (2020) Retina and Vitreous. AAO. San Francisco file:///C:/Users/HP/Downloads/BCSC1718_S12.pdf.
 27. Jia LY, Sun YX, Zhang YP, Ma K (2020) Risk Factors of Recurrent Retinal Detachment Following Surgical Treatment for Rhegmatogenous Retinal Detachment: A Retrospective Study. Risk Manag Health Policy 30: 3165-3171.
 28. Todd O.M, Wilkinson C, Hale M, Wong N.L Hall, et al (2019) Is the association between blood pressure and mortality in older adults different with frailty? A systematic review and meta-analysis. Age Ageing 48:627–635.