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The Relationship Between Quality of Sleep and Quality of Life of Patients in Medan, Indonesia

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Abstract

BACKGROUND: Hypertension is one of the most common diseases around the world, which is the most risk factor related to cardiovascular disease. The quality of life of hypertensive patients is influenced by various factors, namely age, sex, educational background, ethnicity and nutritional status. Another factor that is also important is the quality of sleep.

AIM: We aimed the assessment of sleep quality using a PSQI questionnaire, and quality of life assessment with the SF-36 questionnaire.

METHODS: This study was a cross-sectional study of 45 respondents at the H. Adam Malik Central General Hospital in Medan in 2018. Assessment of sleep quality was performed through the PSQI questionnaire (Pittsburgh Sleep Quality Index), and quality of life assessment was carried out with the SF-36 questionnaire.

RESULTS: The prevalence of impaired sleep quality in hypertensive patients was 35.6%. Most patients have a good quality of life, with 71.1%. In this study, sleep quality was found to be related to the quality of life (p = 0.037). Furthermore, variables related to sleep quality were sex (gender) (p = 0.003) and education (p = 0.005). In multivariate analysis, the quality of life is predominantly influenced by sleep quality (p = 0.025).

CONCLUSION: The quality of life of hypertensive patients is influenced by the quality of sleep.

Introduction

Hypertension is one of the most common diseases in the world [1]. For patients who have hypertension, blood pressure control is a top priority to obtain maximum function and good welfare [2]. The quality of life for hypertensive patients is influenced by several factors such as age, gender, education, ethnicity, habits and nutritional status. Moreover, another important factor that needs to be considered regarding hypertensive patient's quality of life is the quality of sleep [3].

Ru Qing Liu et al. discovered that increased blood pressure was also associated with the Pittsburgh Sleep Quality Index (PSQI) component including short sleep duration, poor sleep quality, prolonged sleep latency and sleep disturbances [4].

Kai Lui et al. investigated the different combined associations of sleep duration and sleep quality about the prevalence of hypertension. The results showed an additive interaction between sleep quality and the prevalence of hypertension. Despite many limitations, this cross-sectional study shown that both short sleep duration and poor sleep quality were associated with the prevalence of hypertension in adult Chinese men [5]. Also, Oluwseun et al. Stated that the relationship between blood pressure and sleep quality showed an increase in blood pressure in individuals with shorter sleep duration [6].

We aimed the assessment of sleep quality using a PSQI questionnaire, and quality of life assessment with the SF-36 questionnaire.

Methods

This study was a cross-sectional study of 45 respondents. It was conducted at the H. Adam Malik Central General Hospital in Medan in 2018. The assessment of sleep quality was performed using a PSQI questionnaire, and quality of life assessment was carried out with the SF-36 questionnaire.

Results

The respondent's characteristics are described in Table 1 below.

Table 1: The respondent's characteristics

Variable	n	Percentage (%)
Quality of life		
Good	32	71.1
Bad	13	28.9
Quality of sleep		
Good	29	64.4
Bad	16	35.6
Sex		
Male	18	40
Female	27	60
Educational background		
High	24	53.3
Low	21	46.7
Income		
High	34	75.6
Low	11	24.4
Age		
< 45 years old	10	22.2
45 – 55 years old	18	40
> 55 years old	17	37.8
Nutritional status		
Underweight	1	2.2
Normal weight	17	37.8
Overweight	27	60

From a total of 45 respondents, they are categorised as a male with 18 respondents (40%) and female with 27 respondents (60%). Also, the highest age range was discovered to be 45-55 years, with 18 (40%) respondents, only slightly differed to the age > 55 years with 17 (37.5%) respondents.

The quality of life of respondents was assessed by using the SF 36 questionnaire, and the result is described in Table 2.

Table 2: The characteristic of a respondent's quality of life

Variable	n	Percentage (%)	Mean ± SD	Normal
SF-36 total score			62.58 ± 15.52	≥ 60
Good	32	71.1		
Bad	13	28.9		
Physical function			46 ± 25.08	≥ 60
Physical limitation			27.84 ± 39.21	≥ 60
Illness			84.38 ± 22.59	≥ 60
General health			57.11 ± 17.95	≥ 60
Vitality			59.33 ± 21.55	≥ 60
Social function			80.87 ± 27.80	≥ 60
Emotional limitation			71.78 ± 42.62	≥ 60
Mental health			74.49 ± 18.31	≥ 60

Based on Table 2 above, it can be seen that majority of respondents are having a good quality of life with 32 respondents (71.1%), while the other 13 respondents (28.9%) are having a bad quality of life.

Characteristic of respondents related to sleep quality

To assess the respondent quality of sleep, the PSQI questionnaire was used. The result is shown in Table 3 below.

Table 3: The relationship between respondent's characteristics and quality of sleep

	Quality of Sleep				p	Quality of Sleep Score (mean ± SD)	p
	Bad		Good				
	n	%	n	%			
Sex							
Male	11	61.1	7	38.9	0.003[a]	6.33 ± 2.66	0.003[a]
Female	5	18.5	22	81.5		3.81 ± 2.24	
Educational background							
High	12	57.1	9	42.9	0.005[a]	3.71 ± 1.94	0.005[a]
Low	4	16.7	20	83.3		6.10 ± 2.90	
Income							
Low	6	54.5	5	45.5	0.161[b]	6.18 ± 2.96	0.058[a]
High	10	29.4	24	70.6		4.38 ± 2.49	
Age							
< 45 years old	5	50	5	50	0.096[a]	5.80 ± 2.49	0.110[b]
45 – 55 years old	3	16.7	15	83.3		3.89 ± 2.52	
> 55 years old	8	47.1	9	52.9		5.24 ± 2.82	
Nutritional status							
Underweight	0	0	1	100	0.666[a]	3	0.632[b]
Normal weight	7	41.2	10	58.8		5.18 ± 2.56	
Overweight	9	33.3	18	66.7		4.67 ± 2.83	

[a]Chi Square; [b] Fischer's Exact.

After conducting statistical analysis, several factors are considered to affect the quality of sleep of patients with hypertension, namely sex and educational background. In the other hand, economic status, age and nutritional status do not contribute to the quality of life of patients with hypertension.

Table 4: Multivariate analysis of variables affecting the quality of sleep

Variable	Coefficient	p	Exp (B)	95% CI	
				Lower	Upper
Final Step					
Sex	2.046	0.009	7.737	1.654	36.188
Educational background	2.011	0.012	7.471	1.561	35.749
Constant	-2.609	0.001	0.074		

Characteristics of patients related to the quality of life

After conducting statistical analysis, there is only one factor which is considered to affect the quality of life of patients with hypertension, namely quality of sleep.

Table 5: The relationship between patients' characteristics and quality of life

	Quality of Life				p	Quality of Life Score (Mean ± SD)	p
	Bad		Good				
	n	%	n	%			
Quality of life							
Bad	8	50	8	50	0.037[a]	54 ± 19.26	0.02[a]
Good	5	17.2	24	82.8		67.17 ± 10.96	
Sex							
Male	7	38.9	11	61.1	0.227[b]	59.17 ± 17.93	0.248[a]
Female	6	22.2	21	77.8		64.70 ± 17.76	
Educational background							
High	4	16.7	20	83.3	0.053[b]	67.13 ± 10.82	0.039[a]
Low	9	42.9	12	57.1		57.19 ± 18.60	
Income							
Low	6	54.5	5	45.5	0.053[a]	51.73 ± 16.26	0.004[b]
High	7	20.6	27	79.4		65.97 ± 13.91	
Age							
< 45 years old	2	20	8	80	0.364[b]	61.60 ± 9.97	0.162[c]
45 – 55 years old	4	22.2	14	77.8		66 ± 17.61	
> 55 years old	7	41.2	10	58.8		59.29 ± 16.10	
Nutritional status							
Underweight	0	0	1	100	0,650[b]	64	0.927[b]
Normal weight	6	35.3	11	64.7		61.59 ± 16.43	
Overweight	7	25.9	20	74.1		63 ± 15.66	

[a] Fischer's Exact; [b] Chi Square.

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While in the opposite, sex, economic status, educational background, age and nutritional status do not affect the quality of life of patients with hypertension.

Table 6: Multivariate analysis of variables affecting the quality of life

Variable	Coefficient	p	Exp (B)	95% CI	
				Lower	Upper
Final Step					
Quality of sleep	1.569	0.025	4.800	1.214	18.971
Constant	-1.569	0.001	0.208		

Discussion

In this study, the patient's quality of life scores as a result of the total SF-36 score shows a good quality of life category with 32 people (71.1%) and bad quality of life with 13 people (28.9%).

Relationship of Patients Characteristic with Quality of Sleep

Based on the result of this study, it can be seen that sex(gender) is related to sleep quality (p = 0.003). This result was supported by Lemola's research, which found that sex was associated with sleep quality (p = 0.001) [7]. This is because female have better sleep quality with longer sleep times, compared to male [8].

Moreover, the level of education is also related to sleep quality (p = 0.005), this was also supported by Notoatmodjo, discovered that the level of education is influential in responding to something which came from outside [9].

Economic status is one of the factors that cause sleep disturbances, but this is not in line with what was stated by Tel et al. that patients with low economic status and who have good social support could have good sleep quality(10). This is in according to the results of this study, where the level of economic status is not related to sleep quality (p = 0.161).

In this study, it is found that age was not related to sleep quality (p = 0.096). This is in line with the study by Alebiosu et al., where there was no relationship between age and sleeps quality (p = 0.065) [11]. Furthermore, there were other factors, such as environment, lifestyle, and psychological stress, which caused no difference in the average bad quality of sleep in the elderly.

Furthermore, nutritional status was not related to sleep quality (p = 0.666). It is supported by Erwan's research, where there was no relationship between nutritional status and sleep quality (p = 0.09) [12]. Eating habits are the way individuals and groups choose, consume, and use available food based on the social and cultural factors in which they live [13].

Characteristic Relationship of Patients with Quality of Life

Based on the result, sleep quality was associated with quality of life in hypertensive patients (p = 0.037). This result was supported by Nur Azmi, who obtained the results that there was a relationship between sleep quality and quality of life (p = 0.002) [3]. Sleep is one of the basic phenomena that are important for human life; the majority of human life is filled with sleep. This is also influenced by routine activities, spiritual activities, physical activities such as light exercise and the use of leisure time which increases the activity of neurotransmitters which will help to increase the fulfilment of sleep needs [13].

Moreover, this study discovered that there was no relationship between sex with the quality of life of hypertensive patients (p = 0.227). This result is in according to a study conducted by Fransisca Melani et al., who found that sex was not related to the quality of life of patients (p = 0.023) [14]. Furthermore, male respondents had a poorer quality of life than women; this was partly due to work differences, life habits, genetic or physiological conditions [15].

In this study, there was no relationship between the status of education level and quality of life (p = 0.053). The level of education does not directly affect the quality of life, but the level of education influences a person's lifestyle and habits such as smoking, alcohol, etc. [14]. Also, there was no correlation between economic status and quality of life (p = 0.053). Respondents who have low income can still use the facilities provided by the government. This shows that the quality of life is not affected by income, but many other factors [14].

All ages have the same risk in terms of changes in quality of life, where not only patients in elder age who are experiencing a decrease in quality of life but also patients with young age can also experience a decrease in quality of life due to chronic diseases. This is in line with the results of the study found that age is not related to the quality of life of hypertensive patients (p = 0.364). Also, it is supported by Nisha Bandhari's research stating age is not related to the quality of life (p = 0.001) [16].

Nutritional status is not related to the quality of life of hypertensive patients (p = 0.650). The results of this study were supported by research conducted by Yahsarul Ihksan, finding that nutritional status was not related to the quality of life of Hemodialysis patients (p = 0.028) [17]. The theory states that underweight patients have a poor quality of life, because in this study, there were few underweight patients so that different results were obtained from the theory.

Based on this study, it can be concluded that the quality of life is dominantly influenced by sleep quality, with the prevalence of impaired sleep quality in hypertensive patients is 35.6% and most patients have a good quality of life with 71.1%. Moreover, several variables related to sleep quality were found to be sex (gender) and educational background.

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Ethical Aspects

On behalf of this opportunity, authors confirm that there is no conflict of interest faced, and this study has followed the ethical aspects as regulated by the University of Sumatera Utara.

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