The Correlation Between Quality of Sleep and Quality of Life in Hemodialysis Patients; An Indonesian Sample

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KEYWORDS

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ABSTRACT

Background: Sleep quality is important clinical outcomes of hemodialysis patients. Nurse has importance role to maintains the quality of life in hemodialysis patients. Therefore, quality of sleep and quality of life in hemodialysis patients in research are needed in order to improve quality of life hemodialisys patients. **Aim**: To determine the correlation between quality of sleep and quality of life in hemodialysis patients. **Method**: Cross-sectional study. The Pittsburgh Sleep Quality Questionnaire (PSQI) and WHOQOL–BREF questionnaires were administered in this study. The Kendall Tau test was used to determine the correlation between sleep quality and quality of life. **Results**: Two hundred four respondents participated in this study. A total 90.2% of hemodialysis patients experienced mild sleep disturbances and, 48.3% of patients had a good quality of life category. A significant correlation between sleep quality and quality of life in hemodialysis patients was found (p=0.002). **Conclusion**: Lower levels of quality of sleep in hemodialysis patients have a negative effect on quality of life. Reducing sleep disruption through nursing intervention programs for hemodialysis patients is recommended during nursing care to increase quality of sleep in this vulnerable population. Identification of factors supporting sleep quality and intervention strategies are recommended for further research.

1. Introduction

Chronic Kidney Disease (CKD) is managed via hemodialysis therapy [1, 2]. Hemodialysis is the most common (89%) form of kidney replacement therapy in the world [3]. Studies was informed hemodialysis patients was increased worldwide [4, 5], including in Indonesia [6]. Studies have reported that CKD with hemodialisis is high mortality worldwide [1, 3, 4, 7]. Hemodialysis is associated with high morbidity and excess healthcare costs [3, 8]. Studies have reported that hemodialysis therapy are associated with a high prevalence of sleep disorder [9].

Sleep disorder is problem in hemodialysis patients [10]. Sleep disorder in dialysis patients was associated independently with heightened psychological distress, poorer health-related quality of life and higher mortality [11, 12]. Sleep duration and quality have important effects on quality of life in patients on hemodialysis [13]. Quality of life management is prior focus of patients undergoing hemodialysis, lower levels of quality of life predict higher morbidity and mortality [14, 15]. Quality of life was significantly correlated with self-care ability, stress and, depression [16]. Quality of life focuses on aspects of an individual's physical or mental health that are affected by the presence of disease or by treatment, quality of life has been an important, subjective clinical parameter used to assess the effects of illness and the outcomes of treatment [15].

Indonesia is different from European countries in terms of the wide geographical dispersion of Indonesia's islands, the low concentration of healthcare services in urban areas, and the various cultures and beliefs related to the depression level and self-efficacy status of hemodialysis patients. Few studies in Indonesia have examined the between quality of sleep and quality of life in hemodialysis patients. Therefore, the aim of this study was to investigate the quality of sleep and quality of life in hemodialysis patients in an Indonesian sample.

2. Methodology

Study Design: This study is a quantitative study with a cross-sectional design

Sample: Two hundred and four respondents who received hemodialysis in Hospital at Yogyakarta area, Indonesia. were participated in this study. The inclusion criteria in this study as follows: a) chronic kidney disease patients undergoing hemodialysis; b) aged>18 years; c) able to communicate, read, and write; e) willing to participate as research respondents. Exclusion criteria; Patients who have severe hearing problems, severe pain was excluded.

Data collection: The data were collected through in-person interviews by the researcher of those who could not read, and the respondents completed the questionnaires for the respondents who could read the research instruments.

Instruments

The Indonesian version of the Pittsburgh Sleep Quality Index (PSQI) was used to measure respondents' quality of sleep. PSQI consists of 16 questions and 7 components consisting of subjective sleep quality, sleep latency, sleep duration, sleep efficiency, use of sleeping medication, and daytime dysfunction in daily life during the last week. The measurement results are on an ordinal scale, four categories, namely no sleep disturbance (0), mild sleep disturbance (1-7), moderate sleep disturbance (8-14), and severe sleep disturbance (15-21). The Cronbach's alpha for the Pittsburgh Sleep Quality Index-Indonesian version was adequate [17]

The WHOQOL–BREF Indonesian questionnaire is used to measure respondents' quality of life. WHOQOL–BREF consists of 26 questions; 2 questions for overall quality of life and 24 questions consisting of 7 physical dimensions, 6 psychological dimensions, 3 dimensions of social relationships and 8 environmental dimensions. WHOQOL–BREF measurement results use an ordinal scale, with five categories, namely very poor (0-20), poor (21-40), moderate (41-60), good (61-80), and excellent (81-100). WHOQOL-BREF Indonesian version was valid [18]

Ethical consideration

This study received approval from the Hospital Research Ethics Committee No.00093/KT.7.4/III/2024; 18/03/2024. The researcher explained the research procedures to the respondents, and if they agreed, they advanced to fill out the informed consent form and questionnaire.

Statistical analysis

Statistical analysis was performed using SPSS ver. 22.0 for Windows (SPSS Inc., Chicago, IL, USA). the Kendall Tau correlation test in order to identify the correlation of quality of sleep and quality of life in hemodialysis patients.

3. Result and Discussion

Characteristics of the respondents

This study involved 234 respondents from hemodialysis patients with the majority aged 56-65 years or late elderly 34.6%, male gender 59%, marital status in the married category 89.3%, highest education in the category senior high school 40.2%, employment status in the non-working category 71.4%, and duration of hemodialysis therapy more than 1 year 69.2%. About 90,2% with mild sleep quality disturbances, 9% with moderate sleep disturbances, and 0.9% with severe sleep disturbances (Table 1). Quality of life with categorized as poor 2.1%, moderate quality of life 48.3%, good quality of life 48.3%, and excellent quality of life 1.3% (Table 2)

Correlation between sleep quality and quality of life The results of the Kendall Tau analysis show that there is a significant correlation between sleep quality and quality of life in hemodialysis patients (p=0.002) (Table 3).

Table 1: *Sample Characteristics (care giver, n=60)* Sleep Quality Based on Respondent

Characteristics (*n*=234)

Sleep Quality					
		Mild Sleep Disorders (1-7)	Moderate Sleep Disorders (8-13)	Severe Sleep Disorders (15-21)	Total
Age					
	Late Teenagers (17-25 yrs)	3	1	0	4
	Early Adulthood (26-35 yrs)	15	1	0	16
	Late Adulthood (36-45 yrs)	28	7	0	35
	Early Elderly (46-55 yrs)	55	7	0	62
	Late Elderly (56-65 yrs)	71	7	3	81
	Seniors >65 years	34	0	2	36
Gender	Male	127	11	0	138
	Female	84	10	2	96
Marital status	Marry	189	18	2	209
	Not married yet	15	2	0	17
	Other	7	1	0	8
Education	No school	10	1	0	11
	Elementary school	42	6	0	48
	Junior High School	34	3	0	37
	Senior High School	85	8	1	94
	Higher Education	40	3	1	44
Employment Status	Work	59	8	0	67
	Doesn't work	152	13	2	167
Duration Hemodialysis	<1 year	62	9	1	72
	>1 year	149	12	1	162

Table 2: Quality of Life Based on Respondent Characteristics (*n*=234)

Quality of Life						
		Poor 21-40	**Middle 41-60**	**Good 61-80**	**Excellent 81-100**	**Total**
Age						
	Late Teenagers (17-25 yrs)	0	3	1	0	4
	Early Adulthood (26-35 yrs)	0	7	9	0	16
	Late Adulthood (36-45 yrs)	0	20	15	0	35
	Early Elderly (46-55 yrs)	1	27	34	0	62
	Late Elderly (56-65 yrs)	3	40	36	2	81
	Seniors >65 years	1	16	18	1	36
Gender	Male	2	69	65	2	138
	Female	3	44	48	1	96
Marital status	Marry	4	102	100	3	209

	Not married yet	0	8	9	0	17
	Other	1	3	4	0	8
Education	No school	0	5	5	1	11
	Elementary school	0	21	27	0	48
	Junior High School	2	16	19	0	37
	Senior High School	0	51	42	1	94
	Higher Education	3	20	20	1	44
Employment Status	Work	1	29	37	0	67
	Doesn't work	4	84	76	3	167
Duration Hemodialysis	<1 year	2	37	32	1	72
	>1 year	3	76	81	2	162

Table 3. Correlation between sleep quality and quality of life

Sleep Quality	**Poor 21-40**		**Middle 41-60**		**Good 61-80**		**Excellent 81-100**		**Total**			
											p	***q***
	f	%	f	%	f	%	f	%	f	%		
Mild Sleep Disorders	2	0.9	101	43.2	105	44.9	3	1.3	211	90.2	*0.002*	*-0.202*
Moderate Sleep Disorders	2	0.9	11	4.7	8	3,4	0	0.0	21	9.0		
Severe sleep Disorders	1	0.4	1	0.4	0	0.0	0	0.0	2	0.9		
Total	5	2.1	113	48.3	113	48.3	3	1.3	234	100.0		

Discussion

The results of the present study suggest that lower sleep disorder have a positive effect on quality of life in hemodialysis patients. Studies have shown that 85% of hemodialysis patients experience poor sleep quality [19]. Another study in Europe countries reported a 49% prevalence of poor sleep quality [11]. Quality of sleep in hemodialysis patients are usually due to the stress of chronic disease, prolonged dialysis therapy, subclinical uremic encephalopathy (day-night reversal), disruption of sleep architecture, bone pain, and sleep apnea [20, 21]. Study have been shown the hemodialysis patients experience physical and emotional symptoms burden and have negative impact for sleep quality and quality of life [22]. The study concluded the sleep quality and quality of life are the problem in hemodialysis patients.

Sleep duration and quality are serious problem in hemodialysis patients, in addition age, gender, geographical region and, Body Masss Index association with sleep duration [23]. Hemodialysis has prolonged the survival, it has also adversely affected the sleep and emotional state of these patients [19]. A serious condition in sleep quality, which compromises quality of life, cardiovascular function and increases the risk of mortality [24]. In addition, evaluation of hemodialysis outcomes should include the impact on family and finances [3]. It is implying the comprehensive care management is

needed for this vulnerable population.

Hemodialysis patients judge quality of life as an essential outcome [25]. Quality of life focuses on aspects of an individual's physical or mental health and, subjective clinical parameter used to assess the effects of illness and the outcomes of treatment [15]. Maintain of quality-of-life patients undergoing hemodialysis as nursing outcomes, [14, 15]. Nursing intervention should be manage the predictor variables such as self-care ability, stress and, depression [16] in quality of life management. Investigation of the contributing factors regarding dialysis patients' sleep quality, such as dialysis shifts timing, sleep hygiene, depression are needed for patients' quality of life management.

Limitations of the study: Due to the large Indonesian geographic area, this study was conducted only in Yogyakarta, Java, and may not apply to all of Indonesia

4. Conclusion and future scope

Lower sleep disorder in hemodialysis patients have a positive effect on quality of life. Reducing high levels of sleep disorder through nursing intervention programs for hemodialysis patients is recommended in nursing care to increase quality of life levels in this vulnerable population. Qualitative studies exploring factors of sleep disorder, such as environment are recommended for future research.

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