

## Higher anxiety levels negatively correlated with of sleep quality persons with hemodialysis; A cross-sectional study

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**Abstract:** Haemodialysis is the commonest form of kidney replacement therapy in the world. Physical deterioration and psychological such as anxiety is common problem in this therapy. In addition, quality of sleep is important for this vulnerable population. Nurses have an important role in reduce anxiety and increasing quality of sleep, however there is little known in Indonesian sample. To determine the correlation between anxiety level and sleep quality persons with haemodialysis. Quantitative research-cross-sectional study approach. Two hundred and thirty-four respondents participated in this study. The Pittsburgh Sleep Quality Questionnaire (PSQI) and The Hamilton Anxiety Rating Scale (HARS) Indonesia version questionnaires were administered in this study. Kendall Tau data analysis technique was used in this study. Significant correlation between anxiety and sleep quality in persons with haemodialysis ( $p=0.001$ ;  $r=0.640$ ). Higher anxiety levels negatively correlated with of sleep quality persons with haemodialysis. Managing anxiety could potentially improve the sleep quality of persons with haemodialysis. Assessment and, nursing intervention strategy for manage persons with haemodialysis' anxiety level are needed. Identify the predictor factor of anxiety in this population are recommended for future work.

**Keywords:** *Anxiety, Sleep quality, Haemodialysis.*

### 1. Introduction

End stage kidney disease (ESKD) is a global public health problem since the persons with ESKD must live on hemodialysis. ESKD is a progressive and irreversible damage or an estimated glomerular filtration rate (eGFR) of less than 60 mL/min/1.73 m<sup>2</sup>, persisting for 3 months or more [1]. The incidence of ESKD patients also undergoing routine hemodialysis has increased in number both in the world including in Indonesia [2]. The incidence of ESKD has increased with the population reaching >10% in the world with around >800 million individuals [3, 4]. According to the latest data, a total of around 434.3 million adults suffers from ESKD in Asia, including 65.6 million with a history of advanced stages [5]. The main factor being characterized by hypertension and proteinuria [6]. Anxiety and sleep quality are significant problems for persons with haemodialysis [7].

Persons with ESKD on hemodialysis are affected by physiological such as physical ability limitation and psychological stressors such as anxiety which contribute negative clinical outcomes. Study reported anxiety is psychiatric disorders of significant prevalence among persons with haemodialysis [8]. Anxiety are common psychiatric disorders among patients undergoing hemodialysis [9]. The prevalence of anxiety was found to be 71% among persons with haemodialysis [10]. In addition, higher anxiety and depression levels negatively correlated with various dimensions of sleep quality persons with haemodialysis [8]. Sleep quality is problem in persons with haemodialysis [11]. Sleep quality in

dialysis patients was associated independently with heightened psychological distress, poorer health-related quality of life and higher mortality [12, 13]. Sleep duration and quality have important effects on quality of life in persons with haemodialysis [14].

Sleep quality is one of the most important for clinical physical and mental health outcomes of persons with haemodialysis [13]. Indonesia different with European countries, with various culture and believe were interesting for anxiety level and quality of sleep of persons with haemodialysis. Few studies in Indonesia have examined the determine the correlation between anxiety level and quality of sleep of persons with haemodialysis. Therefore, the aim of this study was to investigate anxiety level and quality of sleep of persons with haemodialysis in Indonesian sample.

## 2. Method

### 2.1. Study Design

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

### 2.2. Sample

Two hundred and thirty-four respondents who received haemodialysis 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 haemodialysis; b) aged >18 years; c) able to communication, reading, and writing; e) willing to participate as research respondents. Exclusion criteria; Patients who have severe hearing problem, severe pain was excluded.

### 2.3. Instruments

The Hamilton Anxiety Rating Scale (HARS) Indonesia Version were used for assessed anxiety level. According to the HARS scale there are 14 question items The HARS assessment is given a score of 0, none, score 1 mild, score 2 moderates, score 3 severe, and score 4 very severe. Then the results of the interpretation of the instrument, the researcher carried out calculations by adding up all the items according to the HARS answers. A score of 0-14 is no anxiety, a score of 15-20 is mild, a score of 21-27 is moderate, a score of 28-41 is severe and a score of 42-56 is very severe. Cronbach's alpha reliability was obtained at 0.756 [15]

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 [16]

### 2.4. Ethical Consideration

This study received approval from the Hospital Research Ethics Committee No No.068/KEP-PKU/III/2024. The researcher explains the research procedures to the respondents, and if they agree, they advance to fill out the informed consent form and questionnaire.

### 2.5. Statistical Analysis

The analysis was executed using Statistical Product and Service Solution (SPSS) version 22 with the Kendall Tau correlation test in order to identified correlation between anxiety and sleep quality persons with haemodialysis.

### 3. Result

#### 3.1. Characteristics Respondent

The characteristics of the ESKD respondents in this study were the majority aged (56-65) years at 34.6% and the minority aged (17-25) years at 1.7%. Next there is gender with the majority being male, namely 138 people, amounting to 59%. Regarding marital status, the majority are married at 209 with the percentage is 89.3% and other minorities cover 3.4%. Then there is education with the majority being high school, namely 94 with 40.2% and minorities with no school, 11 with 4.7%. Then there is employment status with not working at 71.4%.

**Table 1.**

Characteristics respondent ( $n=234$ ).

Characteristic	Frequency(f)	(%)
<b>Age</b>		
17-25 years	4	1.7
26-35 years	16	6.8
36-45 years	35	15.0
46-55 years	62	26.5
56-65 years	81	34.6
>65 years	36	15.4
<b>Gender</b>		
Male	138	59.0
Female	96	41.0
<b>Married status</b>		
Married	209	89.3
Single	17	7.3
Others	8	3.4
<b>Education level</b>		
No School	11	4.7
Elementary school	48	20.5
Junior high school	37	15.8
Senior high school	94	40.2
University	44	18.8
<b>Employment status</b>		
Employed	67	28.6
Unemployed	167	71.4
<b>Type of health insurance</b>		
Nasional insurance	230	95.8
Private insurance	4	1.7
<b>Duration of haemodialysis</b>		
<1 year	72	30.8
>1 year	162	69.2
<b>Anxiety status levels</b>		
No anxiety	0	0
Mild anxiety	204	87.2
Moderate anxiety	30	12.8
Severe anxiety	0	0
Very serious anxiety	0	0
<b>Sleep quality status level</b>		
No sleep disturbance	0	0
Mild sleep disturbance	213	91
Moderate sleep	21	9
Disturbance	0	0
Severe sleep disturbance	0	0
<b>Total</b>	<b>234</b>	<b>100</b>

Then there is health insurance with the National insurance majority at 95.8%, the duration of hemodialysis with the majority >1 year at 69.2%. In addition, anxiety among persons with haemodialysis respondents in this study was in the mild category 87.2% and in the moderate category 12.8%. Respondents experienced mild sleep disorders and 9% had moderate sleep disorders Table 1.

### 3.2. Anxiety and Sleep Quality Haemodialysis Patients

The Kendall-tau statistical analysis results showed a significant positive correlation between anxiety and sleep quality in persons with haemodialysis ( $p=0,001$ ;  $r=0,640$ ). Table 2.

**Table 2.**

Correlation of anxiety and sleep quality haemodialysis patients.

Variable	n	Correlation coefficient	p
Anxiety	234	0.640	0.001
Sleep quality			

Source: \* Kendall Tau correlation test.

## 4. Discussion

The results of current study were reported that anxiety levels correlated with of sleep quality persons with haemodialysis. This study found 91% respondent with mild sleep quality problem, and 9% with moderate sleep quality problem, study in Europe countries reported a 49% prevalence of poor sleep quality [12]. Quality of sleep-in persons with haemodialysis 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 [17, 18]. Study have been shown the persons with haemodialysis experience physical and emotional symptoms burden and have negative impact for sleep quality and quality of life [19]. The study implies the anxiety dan sleep quality are the problem in persons with haemodialysis.

Hemodialysis patients are affected by psychological stressors such as anxiety which correlated with the sleep quality [8]. Previous study was informed the anxiety are common psychiatric disorders among persons with haemodialysis [9]. The prevalence of anxiety was found to be 71% among persons with haemodialysis [10]. In addition, higher anxiety and depression levels negatively correlated with various dimensions of sleep quality in persons with haemodialysis [8]. Sleep quality is problem in persons with haemodialysis [11]. Sleep quality in dialysis patients was associated independently with heightened psychological distress, poorer health-related quality of life and higher mortality [12, 13]. Sleep duration and quality have important effects on quality of life in persons with haemodialysis [14].

Sleep quality is one of the most important for clinical physical and mental health outcomes of persons with haemodialysis [13]. Sleep duration and quality are serious problem in persons with haemodialysis, in addition age, gender, geographical region and sleep duration [20]. Hemodialysis has prolonged the survival, it has also adversely affected the sleep and emotional state of persons with haemodialysis [21]. A serious condition in sleep quality, which compromises quality of life, cardiovascular function and increases the risk of mortality [22]. In addition, evaluation of hemodialysis outcomes should include the impact on family and finances [23]. It is implying the comprehensive care management is needed for this population.

Persons with haemodialysis judge quality of life as an essential outcome [24]. 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 [25]. Maintain of quality-of-life persons with haemodialysis as nursing outcomes, [25, 26]. Nursing intervention should be manage the predictor variables such as self-care ability, stress and, depression [27] in quality of life management. Investigation of the contributing factors regarding dialysis persons with haemodialysis' sleep quality, such as dialysis shifts timing, sleep hygiene, depression are needed for persons with haemodialysis' quality of life management.

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

## 5. Conclusion

High anxiety level persons with haemodialysis it would be have high sleep disorders problem. Managing anxiety could potentially improve the sleep quality of persons with haemodialysis, Assessment and nursing intervention strategy for manage persons with haemodialysis' anxiety level are needed. Identify the predictor factor of anxiety in this population are recommended for future work.

## Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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