

THE EFFECT OF INTRADIALYTIC EXERCISE ON ANXIETY LEVELS IN PATIENTS WITH CHRONIC KIDNEY FAILURE IN THE HEMODIALYSIS ROOM OF RSUD TANJUNGPINANG

Yovi Octaviana Hasibuan¹, Mira Agusthia², Althafia Athaya Drana³, Rachmawaty M Noer⁴

¹Nursing Study Program, Faculty Of Healthy Sciences, University Awal Bros, yopyoctaviana10@gmail.com

²Nursing Study Program, Faculty Of Healthy Sciences, University Awal Bros, agusthiamira@gmail.com

³Nursing Study Program, Faculty Of Healthy Sciences, University Awal Bros, althafiathaya@gmail.com

⁴Nursing Study Program, Faculty Of Healthy Sciences, University Awal Bros, rachmawatymnoer1977@gmail.com

*Corresponding author: yopyoctaviana10@gmail.com

ABSTRACT

Background: Chronic kidney failure is a pathophysiological condition that can arise due to various etiologies. Hemodialysis patients with chronic kidney failure who experience problems and clinical difficulties can affect anxiety levels, one of the non pharmacological treatments that can be given to patients is Intradialytic exercise because the movements are simple, do not interfere with the hemodialysis procedure, and are useful in reducing anxiety levels. **Research Objectives:** This study aims to determine the effect of intradialytic exercise on anxiety levels in patients with chronic kidney failure in the hemodialysis room of Tanjungpinang City Hospital. **Research Method:** This study uses a quantitative research method with a quasi-experimental design without control design, the design form used is pre and post test. The sample in this study of patients treated at Tanjungpinang City Hospital amounted to 30 people with random sampling techniques. The anxiety level measurement instrument uses the Hamilton Anxiety Rating Scale (HARS) questionnaire. The statistical analysis used was a normality test with a sig value. > 0.005, t paired sample t test and independent t test. **Study Results:** There was a significant influence between the average anxiety level score at the pre-test and post-test in the intervention group (intradialytic exercise) (mean pre- test = 24.60 to mean post-test = 18.33) with a p-value of 0.000. **Conclusion:** this study found the effect of intradialytic exercise on anxiety levels in patients with chronic kidney failure in the hemodialysis room of Tanjungpinang City Hospital. **Suggestion:** Suggestion for Tanjungpinang City Hospital, intradialytic exercise therapy can be considered as a non-pharmacological management in patients with chronic kidney failure in the Hemodialysis room to reduce anxiety levels.

Keywords: Chronic kidney failure, hemodialysis, anxiety, intradialytic exercise

INTRODUCTION

A. Background

Chronic kidney disease (CKD) is a global health problem that causes progressive decline in kidney function and ultimately kidney failure, with hemodialysis as the primary treatment. Patients undergoing hemodialysis often experience stress and anxiety due to physical conditions, activity limitations, and lifelong dependence on this therapy. Continued anxiety can reduce quality of life and treatment adherence. Non-pharmacological approaches such as intradialytic exercise have been shown to be effective in reducing anxiety and improving patients' physical and psychological well-being without disrupting the hemodialysis procedure. However, the application of this exercise is still limited in Indonesia. Therefore, this study was conducted to determine the effect of intradialytic exercise on anxiety levels in patients with chronic kidney failure undergoing hemodialysis at Tanjungpinang City Hospital.

B. Problem Formulation

Based on the description of the background of the problem, the problem formulation in this study is "Is there an effect of intradialytic exercise on anxiety levels in patients with chronic kidney failure in the hemodialysis ward at Tanjungpinang City Hospital?"

C. Research Objectives

1. General Purpose

To determine the effect of intradialytic exercise on anxiety levels among patients with chronic kidney failure in the hemodialysis room of RSUD Tanjungpinang.

2. Specific Objectives

- a. To identify the anxiety level of chronic kidney failure patients before performing intradialytic exercise in the hemodialysis room of RSUD Tanjungpinang.
- b. To identify the anxiety level of chronic kidney failure patients after performing intradialytic exercise in the hemodialysis room of RSUD Tanjungpinang.
- c. To analyze the effect of intradialytic exercise on anxiety levels among chronic kidney failure patients undergoing hemodialysis at RSUD Tanjungpinang.

D. Research Benefits

1. For RSUD Tanjungpinang

As a source of information and input for improving nursing care for patients with chronic kidney failure who experience anxiety during hemodialysis.

2. For Universitas Awal Bros

The results of this study are expected to contribute to scientific literature and serve as a reference related to the effect of intradialytic exercise on anxiety levels among hemodialysis patients.

3. For Future Researchers

This study is expected to serve as a reference for future research and enhance understanding of the impact of intradialytic exercise on anxiety in patients with chronic kidney failure.

4. For Respondents

This study employed a quantitative method with a quasi-experimental design, using a pre- and post-test nonequivalent control group approach. It aimed to determine the effect of intradialytic exercise on anxiety levels among patients with chronic kidney failure undergoing hemodialysis at RSUD Tanjungpinang. The research was conducted from December 2024 to February 2025, involving all chronic kidney failure patients in the hospital's hemodialysis unit. Samples were

selected using a random sampling technique. The intervention group received a 30-minute intradialytic exercise session, while the control group received standard hospital care in the form of deep breathing relaxation therapy. The dependent variable was anxiety level, and the independent variable was intradialytic exercise.

MATERIALS AND METHODS

A. Research Design

This study was a quasi-experimental study, using a pre- and post-test nonequivalent control group design. This type of research is experimental, meaning it aims to determine the effect of one treatment on another under controlled conditions (Sugiyono, 2021). Researchers conducted observations and data measurements at a single point in time; in other words, they only conducted one observation without any follow-up (Djaali, 2020). This study consisted of two groups: a control group and an intervention group. The intervention group received 30 minutes of intradialytic exercise therapy, while the control group received standard intervention, including 30 minutes of deep breathing relaxation therapy, according to hospital procedures.

The researchers conducted a pre-test (OA1) on the subjects to determine their anxiety levels before the intradialytic exercise treatment, after 30 minutes of dialysis. Next, they administered treatment (X1) consisting of 30 minutes of intradialytic exercise to the subjects. A post-test (OA2) was administered to the subjects to determine their anxiety levels after the intradialytic exercise treatment. The results of OA1 and OA2 were then compared to determine the pre-test and post-test scores of the subjects.

The researchers conducted a pre-test (OB1) for the control group (B) to determine their anxiety levels before the deep breathing relaxation treatment began 30 minutes after dialysis. Next, they administered treatment (X2) consisting of deep breathing relaxation for 30 minutes. A post-test (OB2) was administered to determine their anxiety levels after the deep breathing relaxation treatment.

The results of OB1 and OB2 were then compared to determine the pre-test and post-test scores of the subjects. The researchers compared the pre-test and post-test scores between the control group and the intervention group, which received the same treatment. Based on the explanation above, the following research design is based on a pre-test and post-test nonequivalent control group design:

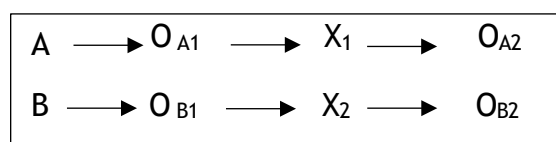


Figure 3.1 Research Design

Caption for Figure 3.1: Research design:

A: Intervention group

B: Control group

OA1: Results of the first anxiety measurement before intradialytic exercise treatment.

OA2: Results of the second anxiety measurement after intradialytic exercise treatment.

OB1: Results of the first anxiety measurement before deep breathing relaxation therapy.

OB2: Results of the second anxiety measurement after deep breathing relaxation therapy.

X1: Intradialytic exercise therapy treatment.

X2: Deep breathing relaxation therapy treatment.

B. Research Population and Sample

1. Population

A population is all subjects or objects with specific characteristics to be studied (Djaali, 2020). The study population consisted of all 54 patients in the hemodialysis ward at Tanjungpinang City Hospital in the past three months.

2. Sample

The sample is a portion or representative of the population to be studied (Sugiyono, 2021). The sampling technique used was probability sampling, namely random sampling using a lottery system. Random sampling is used in research to produce a representative sample and minimize bias.

According to Sugiyono (2021), for experimental research, the minimum appropriate sample size is 30 people. The focus of this study was 30 patients with chronic kidney failure undergoing hemodialysis in the hemodialysis ward at Tanjungpinang City Hospital: 15 in the intervention group and 15 in the control group. The inclusion, exclusion, and dropout criteria were determined by the researcher:

a. Inclusion Criteria

- 1) Male and female adult patients aged 17 years and over
- 2) Compos mentis awareness
- 3) Having undergone hemodialysis for at least 1 month
- 4) Undergoing hemodialysis regularly twice a week
- 5) Cognitive ability to read and understand the questionnaire
- 6) Pre-test anxiety questionnaire score of at least 14–20 (mild anxiety)
- 7) Chronic kidney disease patients undergoing hemodialysis using a dialyzer
- 8) Willingness to participate

b. Exclusion Criteria

- 1) Male and female adult patients aged 65 years and over
- 2) Hemoglobin level <9 g/dl
- 3) Blood pressure >220/110 mmHg
- 4) Heart rate >100 beats/minute before intradialytic exercise.
- 5) Pre-test anxiety questionnaire score less than 14 (no anxiety)
- 6) HD once a week
- 7) HD three times a week
- 8) Undergoing emergency or emergency hemodialysis
- 9) Chronic kidney disease patients undergoing hemodialysis using the Continuous Ambulatory Peritoneal Dialysis (CAPD) method.
- 10) Decreased level of consciousness.
- 11) Musculoskeletal problems that contraindicate intradialytic exercise.
- 12) Chronic kidney disease patients with acute or chronic medical conditions that make

intradialytic exercise assessment dangerous or impossible.

- 13) No arteriovenous (AV) fistula problems.
- 14) Not currently hospitalized, as these patients are considered unstable and therefore at risk for intradialytic exercise.
- 15) To minimize exercise-related risks, participants were excluded if they had a history of mental illness, cardiac risk factors (myocardial infarction, angina pain, or uncontrolled hypertension), or a diagnosis of glaucoma within the previous 6 months.
- 16) Unwilling to participate.

c. Dropout Criteria

- 1) Failure to complete intradialytic exercise therapy according to the Standard Operating Procedure (SOP).
- 2) Injury during intradialytic exercise therapy.
- 3) Deterioration of condition during hemodialysis or intradialytic exercise therapy.
- 4) Death of the patient during the study observation period.

C. Research Location and Time

The location of this research was the Hemodialysis Room of Tanjungpinang City Hospital. The study was conducted for 6 days, from February 12, 2025, to February 18, 2025.

D. Data Collection Tools

1. Primary Data

Information gathered from respondents' responses to the questionnaire was the primary data source for this study. In this case, the respondents were chronic kidney disease patients undergoing hemodialysis in the hemodialysis ward at Tanjungpinang City Hospital. The method used by the researchers to collect data involved a series of written questions given to respondents to answer, as well as directed interviews involving questions from the questionnaire that were not answered by the respondents. The researchers measured the patients' anxiety levels using the Hamilton Anxiety Rating Scale (HARS) questionnaire.

According to Kautsar, F., et al. (2015), the degree of anxiety is determined by adding a score of 1-14, with the following results:

- a. less than 14 = no anxiety
- b. 14 – 20 = mild anxiety
- c. 21 – 27 = moderate anxiety
- d. 28 – 41 = severe anxiety
- e. 42 – 56 = very severe anxiety

2. Secondary Data

This data comes from patient report books, official HD ward reports, and medical records related to chronic kidney failure patients in the hemodialysis ward at Tanjungpinang City Hospital.

E. Validity and Reliability Testing

1. Validity Testing

Validity testing is proof that a measuring instrument actually measures what it is intended to measure. A questionnaire is considered valid if the questions can provide information for assessing something. This study used a pre-existing and standardized anxiety questionnaire. The Hamilton Anxiety Rating Scale (HARS) was not tested for validity because it was adopted from

the research of Kautsar, F., et al. (2015). The validity results of the HARS instrument were shown in the corrected item-total correlation section, where all questions had positive values and exceeded the 0.05 requirement. Researchers adopted the SOP for intradialytic exercise therapy obtained from previous researchers and tested by Herlina, S (2023) at the Pandaoni Medika Hemodialysis Clinic in the educational journal "Intradialysis Exercise for Hemodialysis Patients."

2. Reliability Testing

Research measurement tools must consider reliability and validity, Reliability is defined as how well a questionnaire measurement tool produces the same or comparable results even when measurements are taken randomly or repeatedly. If the Cronbach's Alpha value for a variable is greater than 0.60, then the variable can be considered consistent or reliable in its measurement (Sugiyono, 2021).

The researcher in this study used a pre-existing, standardized anxiety questionnaire. No reliability testing was conducted because it was adopted from the research of Kautsar, F., et al. (2015). The Cronbach's Alpha value was 0.793, with 14 items greater than 0.6. This indicates that the questionnaire was reliable ($0.793 > 0.6$).

F. Data Collection Procedure

The data collection method for this study was as follows:

1. The researcher submitted an ethical feasibility review request to the Awal Bros University Health Research Ethics Committee.
2. The researcher submitted a research permit from Awal Bros University to the Director of Tanjungpinang City Hospital.
3. The researcher submitted a request for research permission from the institution to the Director of Tanjungpinang City Hospital.
4. After receiving approval from the Director of Tanjungpinang City Hospital, the researcher decided to collect the required data.
5. The researcher met with the head of the hemodialysis ward at Tanjungpinang City Hospital to request permission to conduct the research and Collected data on patients with chronic kidney failure undergoing hemodialysis.
6. The study was conducted over six days, from February 12, 2025, to February 18, 2025.
7. The researcher selected respondents according to the inclusion and exclusion criteria. Respondents who met the inclusion criteria were recruited and those who were excluded were excluded. The study began with the intervention group and continued with the control group.
8. The study began by recording the number of patients who attended hemodialysis according to the schedule and met the inclusion and exclusion criteria. The next step was to assign a code number to each member of the population on a small piece of paper. The papers were then placed in a container and drawn at random.
9. The researcher met with the respondents and explained intradialytic exercise, including its definition, purpose and benefits, indications, and contraindications. Then, the researcher provided a participant application form and an informed consent form.
10. Respondents who agreed to participate in the study were asked to sign the informed consent form.
11. The researcher assessed and examined the patient's general condition and measured their vital signs.
12. Researchers assessed anxiety levels before intradialytic exercise therapy was administered to respondents in the intervention group and researchers The researcher assessed anxiety levels before administering deep breathing relaxation therapy to the control group and provided a comfortable environment.

13. The researcher conducted the intervention in accordance with the observation sheet and standard operating procedures (SOP): 30 minutes of intradialytic exercise for the intervention group and 30 minutes of deep breathing relaxation exercise for the control group.
14. After implementing the non-pharmacological therapy of intradialytic exercise for the intervention group and deep breathing relaxation exercise for the control group, the researcher assessed anxiety levels and recorded them as research data to determine the effect of intradialytic exercise on anxiety levels in the intervention group and to evaluate the patients after the intradialytic exercise was completed. The researcher observed the effect of deep breathing relaxation on anxiety levels in the control group and to evaluate the patients after the deep breathing relaxation exercise was completed.
15. After the study was completed and all data was collected, the researcher processed and analyzed the data to obtain the desired results.

G. Data Analysis Plan

1. Data Processing Techniques

All collected data was processed through the following stages (Sugiyono, 2021):

- a. Editing
The researcher ensured that the data from respondents in the intervention and control groups was accurate, ensured that all responses were made in accordance with the guidelines, and ensured that the observation sheets were complete.
- b. Coding
The researcher classified and grouped the data, then coded the data by dividing it into several categories. Each response was coded with a number to facilitate classification and processing of data from respondents in the intervention and control groups.
- c. Tabulating and Computerization
The data was entered into a frequency distribution table, and the researcher checked the percentages of data collected in the intervention and control groups. In this study, the data was presented in the form of a frequency distribution table.
- d. Entry
The researcher grouped the master table and analyzed the data using a computerized statistical program for data cleaning and analysis. After the data was collected, the researcher rechecked and checked for possible errors Coding issues were addressed. Afterward, incomplete data was corrected or analyzed by the researcher.

2. Data Analysis

Data analysis involves collecting data from all respondents. Data analysis techniques in quantitative research use statistics (Sugiyono, 2021). Data analysis consists of:

- a. Univariate Analysis
This data analysis is conducted on each research variable and generally only produces the distribution and presentation of each variable (Sugiyono, 2021). The univariate analysis in this study was the level of anxiety with the following variables: before and after intradialytic exercise.
- b. Bivariate Analysis
According to Sugiyono (2021), once researchers have collected and processed data, the hypothesis testing material will naturally reach a conclusion to accept or reject the hypothesis. The bivariate analysis in this study aims to determine the effect of intradialytic exercise therapy on anxiety levels in patients with chronic kidney failure undergoing hemodialysis. Before conducting the analysis, the researcher conducted a Shapiro-Wilk normality test. It

was found that the data from the intervention group (intradialytic exercise) and the control group (deep breathing relaxation) were said to be normal with a sig value > 0.05 , followed by a paired t-test Sample t-test and independent sample t-test with homogeneity test results > 0.05 .

H. Research Ethics

This research has passed the ethics review by the Awal Bros University ethics committee under license number: 0008/UAB1.20/SR/KE.PK/02.25. The research continued after obtaining permission from the Director of Tanjungpinang City Hospital to conduct the research in the HD room for chronic kidney failure patients undergoing hemodialysis. According to Sugiyono (2021), the research continued in accordance with research ethics guidelines that had undergone ethical due diligence. The following are the ethical principles applied throughout the research.

1. Informed Consent

Before conducting the research, the researcher began by selecting respondents for the intervention and control groups according to the inclusion and exclusion criteria. The researcher recruited respondents who met the inclusion criteria and excluded those who did not. The researcher met with respondents and provided initial information to ensure they understood the purpose of the study and its implications. Important details that researchers convey to respondents include respondent involvement, the reason for the study, the type of data required, implementation procedures, potential problems that may arise, benefits, confidentiality, and other related specifics. In the intervention group (intradialytic exercise) and the control group (breathing relaxation In the context of this study, the researcher explained the definition, purpose, and benefits, indications, and contraindications. The researcher provided a respondent application form and an informed consent form. Respondents who agreed to participate in the study were asked to sign the informed consent form. Researchers in this study are obligated to respect the rights of patients who choose not to participate.

2. Anonymity

The researcher informed respondents in the intervention group (intradialytic exercise) and the control group (deep breathing relaxation) that their names and personal information would not be displayed on the informed consent form or on the measurement instrument. Only specific data groups would be presented as research findings, with a code recorded on the data collection sheet.

3. Confidentiality

The researcher informed respondents in the intervention group (intradialytic exercise) and the control group (deep breathing relaxation) that the confidentiality of their research findings, information, and other elements was guaranteed by the researcher. The researcher would only report specific data groups in the study results and use them solely for research purposes. This is in line with ethical standards in nursing research.

4. Nonmaleficence

Nonmaleficence, this principle emphasizes that researchers should not carrying out actions that pose a danger to respondents (protection from). Before conducting the research, researchers begin by selecting respondents according to the inclusion and exclusion criteria. Researchers take respondents who meet the inclusion criteria and exclude respondents who are excluded. This aims to minimize the risk of injury and harm to patients.

RESULTS AND DISCUSSION

A. Research Results

1. General Description

Tanjungpinang City Regional General Hospital (RSUD) is a regional public hospital owned by the Tanjungpinang City Government. Tanjungpinang City Regional General Hospital (RSUD) is a referral hospital, not only for the residents of Tanjungpinang City but also for surrounding communities such as Bintan Regency, Anambas Regency, Lingga Regency, and communities from surrounding islands. In addition to community health centers and primary healthcare facilities in Tanjungpinang City, RSUD also serves as a referral hospital. One of the supporting facilities at RSUD Tanjungpinang City is hemodialysis. The hemodialysis room has 16 active machines, including one specifically for hepatitis patients. The hemodialysis room has nine nurses, consisting of one ward head and eight nurses.

The researchers conducted a pre-test (OA1) on the intervention group (A) to determine the level of anxiety before intradialytic exercise treatment, after 30 minutes of dialysis. Next, treatment (X1) was given in the form of intradialytic exercise to the subjects for 30 minutes, then a post-test was carried out (OA2) to determine anxiety levels after intradialytic exercise.

The researchers conducted a pre-test (OB1) in the control group (B) to determine anxiety levels before the deep breathing relaxation treatment began 30 minutes after dialysis. Next, the subjects were given a treatment (X2) consisting of deep breathing relaxation for 30 minutes. Then, a post-test (OB2) was administered to determine anxiety levels after the deep breathing relaxation treatment. After the data was collected, the researchers checked to see if all data was complete. Once completed, the researchers conducted an analysis.

General data consisted of respondent characteristics, including: age, gender, education, frequency of dialysis per week, and duration of dialysis. After the general data were presented, specific data on the measured variables, namely pre-test and post-test anxiety levels, were presented. The collected data were then summarized and recorded in a master table for further analysis. Prior to the analysis, the researchers conducted a data normality test, and the Shapiro-Wilk normality test value was <0.05 , indicating a normally distributed data distribution. After that, the data was processed and analyzed using a paired sample t-test and continued with an independent t-test using a statistical program that has been presented in tabular form.

2. Respondent Characteristics

Table 4.1

Frequency distribution of respondent characteristics by age in the Hemodialysis Ward at Tanjungpinang City Hospital

No	Respondent Characteristics	Intervention Group (Intradialytic Exercise)		Control Group (Deep Breathing Relaxation)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Age				
	a. 26-45 (Mature)	5	33.3	8	53.4
	b. 46-65 (Elderly)	10	66.7	7	46.7

Source: Secondary Data, February 2025

Table 4.1 shows that the majority of respondents in the intervention group (intradialytic exercise) were aged 46-65 years (10 people) (66.7%). Meanwhile, the majority of respondents in the control group (deep breathing relaxation) were aged 26-45 years (8 people) (53.4%).

Table 4.2
**Frequency distribution of respondent characteristics by gender in the Hemodialysis Ward at
Tanjungpinang City Hospital**

No	Respondent Characteristics	Intervention Group (Intradialytic Exercise)		Control Group (Deep Breathing Relaxation)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Gender				
	a. Male				
	b. Female	6	40.0	11	73.3
		9	60.0	4	26.7

Source: Secondary Data, February 2025

Table 4.2 shows that respondents in the intervention group (intradialytic exercise) were generally female, with 9 (60.0%) respondents, while respondents in the control group (deep breathing relaxation) were generally male, with 11 (73.3%).

Table 4.3
Frequency distribution of respondent characteristics based on highest education in the Hemodialysis Ward of Tanjungpinang City Hospital

No	Respondent Characteristics	Intervention Group (Intradialytic Exercise)		Control Group (Deep Breathing Relaxation)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Last Education				
	a. SD				
	b. SMP	1	6.7	2	13.3
	c. SMA	3	20.0	3	20.0
	d. academy/	9	60.0	5	33.3
	college	2	13.3	5	33.3

Source: Secondary Data, February 2025

Based on Table 4.3, it can be seen that the majority of respondents in the intervention group (intradialytic exercise) had a high school education (9 people (60.0%)), while the majority of respondents in the control group (deep breathing relaxation) had a high school education (5 people (33.3%)) and an academy/university education (5 people (33.3%)).

Table 4.4
Frequency distribution of respondent characteristics based on weekly HD frequency in the Hemodialysis Ward Tanjung pinang City Hospital

Respondent Characteristics	Intervention Group (Intradialytic Exercise)		Control Group (Deep Breathing Relaxation)	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Frequency of undergoing HD per week				
a. 1x a week	0	0	0.0	0
b. 2x a week	15	100	100.0	15
c. 3x a week	0	0	0.0	0

Based on Table 4.4, it can be explained that respondents in the intervention group (intradialytic exercise) and the majority of respondents in the control group (breath relaxation) in) most of them undergo HD 2x a week per week with a percentage of 100.0%.

Table 4.5 Frequency distribution of respondent characteristics based on length of HD program in the Hemodialysis Ward at Tanjungpinang City Hospital

Respondent Characteristics	Intervention Group (Intradialytic Exercise)		Control Group (Deep Breathing Relaxation)	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Long time running HD program				
a. 1-6 Months	0	0.0	0	0.0
b. 6-12 Months	1	6.7	0	0.0
c. >12 Months	14	93.3	15	100.0

Source: Secondary Data, February 2025

Based on Table 4.5, it can be seen that the duration of HD among respondents in the intervention group (intradialytic exercise) was mostly >12 months (14 respondents (93.3%)), while the duration of HD among respondents in the control group (deep breathing relaxation) was mostly >12 months (15 respondents (100.0%)).

3. Research Results

a) Univariate Analysis

Table 4.6
Anxiety levels in the intervention and control groups in the Hemodialysis Ward at Tanjungpinang City Hospital

No	Anxiety Level	Intervention Group (Intradialytic Exercise)		Control Group (Deep Breathing Relaxation)	
		Frequency	Percentage	Frequency	Percentage
		(f)	(%)	(f)	(%)
1.	<i>Pre test</i>				
	a. Less than 14	0	0.0	0	0.0
	b. 14-20	2	13.3	7	46.8
	c. 21-27				
	d. 28-41	10	53.3	6	40.1
	e. 42-56	3	20.1	2	13.3
		0	0.0	0	0.0
	a. less than 14	1	6.7	4	26.7
	b. 14-20	10	53.3	7	46.8
	c. 21-27	3	20.1	3	20
	d. 28-41	1	6.7	1	6.7
	e. 42-56	0	0.0	0	0.0

Source: Secondary Data, February 2025

Based on the results of Table 4.6, changes were observed before and after treatment. The total pre-test anxiety score for respondents in the intervention group (intradialytic exercise) showed that most participants experienced moderate anxiety (10 participants (53.3%). The total post-test anxiety score for respondents in the intervention group (intradialytic exercise) showed that most participants experienced mild anxiety (10 participants (53.3%). This indicates a significant decrease in anxiety levels in the intervention group (intradialytic exercise).

Based on the results of Table 4.6, the total pre-test anxiety score for respondents in the control group (deep breathing relaxation) showed that most participants experienced mild anxiety (7 participants (46.8%). The total post-test anxiety score for respondents in the control group (deep breathing relaxation) showed that most participants experienced mild anxiety (7 participants, 46.8%). This indicates no significant decrease in anxiety levels, and anxiety levels persisted in the control group (deep breathing relaxation).

b) Bivariate Analysis

1) Paired Sample T-test

In this study, the Shapiro-Wilk normality test revealed that the data for the intervention group (intradialytic exercise) and the control group (deep breathing relaxation) were considered normal with a significance value > 0.05 . This was followed by a paired sample t-test.

Table 4.7

Paired sample t-test of pre- and post-test scores between the intervention group (intradialytic exercise) and the control group (deep breathing relaxation) on anxiety levels in chronic kidney failure patients in the hemodialysis ward at Tanjungpinang City Hospital

Anxiety Level	<i>N</i>	<i>Mean</i> $\pm$ <i>SD</i>	<i>Uji t paired sample t test</i> <i>p- value</i>
Intervention Group (Intradynalytic Exercise)			
<i>a. Pre Test</i>	15	24.60 $\pm$ 4.703	.000
<i>b. Post Test</i>	15	18.33 $\pm$ 4.337	
Control Group (Deep Breathing Relaxation)			
<i>a. Pre Test</i>	15	21.60 $\pm$ 5.383	.000
<i>b. Post Test</i>	15	17.40 $\pm$ 4.793	

*p > 0.05 based on paired sample t-test

Based on Table 4.7 above, the results of the bivariate analysis using a paired sample t-test showed that the anxiety levels in the intervention group before and after intradialytic exercise were median pre-test scores of 24.60 and post-test scores of 18.33 and standard deviations of 4.703 and post-test scores of 4.337, compared to the control group that did not receive intradialytic exercise, with median pre-test scores of 21.60 and post-test scores of 17.40 and standard deviations of 5.383 and post-test scores of 4.793. The outcome in the intervention group (intradialytic exercise) had a significance value (sig) of 0.000. Since a sig value of $0.000 < 0.05$ probability, it can be concluded that there is a relationship between the pre-test and post-test variables. A p-value was obtained.

$0.00 > 0.05$ then H_0 is rejected and H_a is accepted, so it can be concluded that there is an effect of intradialytic exercise on the level of anxiety in chronic kidney failure patients in the hemodialysis room.

2) Independent Sample T-Test

This study conducted a homogeneity test on the intervention group (intradialytic exercise) and the control group (deep breathing relaxation). Homogeneity was confirmed with a significance value > 0.05 , followed by an independent sample t-test.

Table 4.8

Independent sample t-test of pre-test and post-test scores between the intervention group (intradialytic exercise) and the control group (deep breathing relaxation) on anxiety levels in chronic kidney failure patients in the hemodialysis ward at Tanjungpinang City Hospital

Anxiety Level	N	Mean	<i>Uji independent sample t test</i> <i>p- value</i>
Intervention Group and Control Group			
a. Pre Test Intervensi	15	24.60	0.115
b. Pre Test Kontrol	15	21.60	
Intervention Group and Control Group			
a. Post Test Intervensi	15	18.33	0.580
b. Post Test Kontrol	15	17.40	

* $p > 0.05$ based on independent sample t-test

Based on Table 4.8 above, the bivariate analysis using an independent sample t-test showed that the average anxiety levels before (pre-test) in the intervention and control groups obtained a P-value of $0.115 > 0.05$, indicating no significant difference. The independent sample t-test showed that the average anxiety levels after (post-test) in the intervention and control groups obtained a P-value of $0.580 > 0.05$, indicating no significant difference.

The independent sample t-test showed a decrease in anxiety levels in the intervention group before and after intradialytic exercise as much as 6.27, this can be seen from the median pre-test value of 24.60 – post-test 18.33. The results of the independent sample t-test of the intervention group compared to the control group that did not receive intradialytic exercise treatment experienced a decrease of 4.2, this can be seen from the median pre-test value of 21.60 – post-test 17.40.

B. Discussion

Chapter V discusses the interpretation of research findings on the effect of intradialytic exercise on anxiety levels in patients with chronic kidney failure undergoing hemodialysis at RSUD Tanjungpinang. The discussion begins by analyzing respondent characteristics and then explains the relationship between these characteristics and anxiety levels before and after the intervention.

Most respondents were middle-aged adults between 46 and 65 years old, followed by younger adults aged 26–45 years. Age was found to influence anxiety levels; younger patients tended to feel more anxious because they had less coping experience and emotional maturity in dealing with long-term illness. Gender was another influential factor, with women generally showing higher anxiety than men. This difference is associated with hormonal and emotional variations—especially the role of estrogen and serotonin in emotional regulation.

Regarding treatment duration, most patients had been undergoing hemodialysis for more than one year, usually twice per week. Those who had been on treatment longer tended to have lower anxiety levels because they were more familiar with the procedure, more accepting of their condition, and more informed about managing their disease. Patients new to dialysis typically experienced greater fear and anxiety about the process, especially about needles and seeing their blood flow through the dialysis tubes.

The core finding of this study showed a significant decrease in anxiety among patients who performed intradialytic exercise. The mean anxiety score dropped from 24.60 before the intervention to 18.33 afterward, with a p-value of 0.000, proving a statistically significant effect. Meanwhile, the control group—who practiced deep-breathing relaxation—also showed a reduction in anxiety levels but to a lesser extent and without statistical significance.

These results confirm that intradialytic exercise can effectively reduce anxiety among hemodialysis patients. The exercise movements are simple, safe to perform during dialysis, and help stimulate the release of endorphins, which improve mood and reduce cortisol levels responsible for stress. The exercise also enhances circulation, increases oxygenation, and provides a sense of comfort and control during the dialysis process.

Supporting studies, such as those by Pu et al. (2019) and Forwaty et al. (2019), also found that intradialytic exercise improves mental health, sleep quality, and overall well-being among hemodialysis patients. By keeping the body active during treatment, it helps reduce fatigue and emotional distress, which are common in chronic illness.

In summary, intradialytic exercise proved to be an effective and practical non-pharmacological intervention to lower anxiety levels in chronic kidney failure patients. It not only helps manage emotional distress but also supports physical health during dialysis. The researcher recommends implementing intradialytic exercise as part of routine nursing care in hemodialysis units to enhance patient comfort, promote relaxation, and improve quality of life.

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