**THESIS**

# COMPARISON OF FATIGUE LEVELS AMONG CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS VIA ARTERIOVENOUS FISTULA (AVF) AND CATHETER DOUBLE LUMEN (CDL) VASCULAR ACCESS AT THE HEMODIALYSIS UNIT OF BENGKULU REGIONAL GENERAL HOSPITAL 2026


Written By:

**INDO PUTRA ALI DAYANTO**

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**MINISTRY OF HEALTH OF THE REPUBLIC OF INDONESIA**
**BENGKULU HEALTH POLYTECHNIC MINISTRY OF HEALTH DEPARTMENT OF NURSING BACHELOR OF APPLIED NURSING STUDY PROGRAM**
**ACADEMIC YEAR 2025/2026**

**THESIS TITLE SHEET**

# COMPARISON OF FATIGUE LEVELS AMONG CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS VIA ARTERIOVENOUS FISTULA (AVF) AND CATHETER DOUBLE LUMEN (CDL) VASCULAR ACCESS AT THE HEMODIALYSIS UNIT OF BENGKULU REGIONAL GENERAL HOSPITAL 2026

Submitted in Partial Fulfillment of the Requirements for the Award of the Bachelor of Applied Nursing Study Program Bengkulu Health Polytechnic Ministry of Health of the Republic of Indonesia



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**ACADEMIC YEAR 2025/2026**

## APPROVAL SHEET

**COMPARISON OF FATIGUE LEVELS AMONG CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS VIA ARTERIOVENOUS FISTULA (AVF) AND CATHETER DOUBLE LUMEN (CDL) VASCULAR ACCESS AT THE HEMODIALYSIS UNIT OF BENGKULU REGIONAL GENERAL HOSPITAL 2026**

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I hereby declare that this thesis is my own original work. The content of this thesis has not been submitted, either in whole or in part, by any other person for the purpose of obtaining an academic degree or qualification at any higher education institution. To the best of my knowledge and belief, this thesis contains no material previously written or published by another person without proper acknowledgment. Where the ideas, findings, or words of others have been used, they have been appropriately cited and referenced in accordance with accepted academic standards.

I make this statement in truth and honesty. Should this thesis subsequently be found to contain any form of plagiarism, I am willing to accept all consequences and assume full responsibility in accordance with the applicable regulations.

Bengkulu, April 10, 2026
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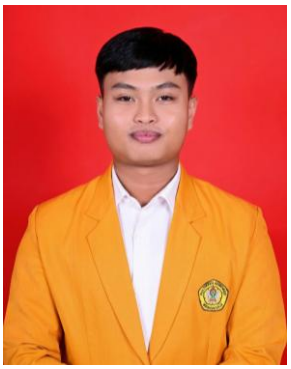
## BIOGRAPHY



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## MOTTO AND DEDICATION

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيم

"In the Name of Allah, the Most Compassionate, the Most Merciful."

- **MOTTO:**

  "I am a pioneer, not an heir. Therefore, never give in to tears or pessimism. Live with optimism, so that the future may be sweet and blessed, together with a harmonious family."

- **DEDICATION:**

  Upon the completion of this undergraduate thesis, I sincerely dedicate this work to:

  - *Alhamdulillahi Rabbil 'Alamin.* All praise is due to Allah *SWT*, whose boundless mercy and infinite love have embraced me throughout this journey. He granted me strength when exhaustion overwhelmed me, patience when challenges arose, and guided every step that enabled me to reach this milestone.
  - May peace and blessings always be upon Prophet Muhammad *SAW*, the bearer of the divine message who guided humanity from the darkness of ignorance to the light of knowledge. Through his noble teachings, I have been inspired to appreciate the true value of pursuing knowledge and lifelong learning.
  - To my beloved mother, whose name is represented by the initials Mrs. S. You are the strongest woman I have ever known. You sacrificed everything for my education and surrounded my life with an endless ocean of unconditional love that healed every moment of exhaustion and despair. Thank you for every drop of sweat, every tear, and every heartfelt prayer offered during the last third of the night, prayers that reached the heavens and became the greatest source of strength and protection throughout my academic journey. Without your blessings, patience, sincerity, and

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"Do not grieve; indeed, Allah is with us."

**(QS. At -Taubah: 40)**

"Indeed, with hardship comes ease."

**(Q.S Al - Insyirah: 5)**

## FOREWORD

Praise and gratitude are sincerely offered to Almighty God for His abundant grace and blessings, which have enabled the author to complete this undergraduate thesis entitled **"Comparison of Fatigue Levels Among Chronic Kidney Disease Patients Undergoing Hemodialysis Via Arteriovenous Fistula (AVF) and Catheter Double Lumen (CDL) Vascular Access at the Hemodialysis Unit of Bengkulu Regional General Hospital 2026"**. This thesis was conducted to compare the fatigue severity experienced by patients with chronic kidney disease (CKD) undergoing maintenance hemodialysis using either an arteriovenous fistula (AVF) or a catheter double lumen (CDL) as vascular access. In addition, this thesis was prepared in partial fulfillment of the requirements for the award of the Bachelor of Applied Nursing degree.

During the preparation of this thesis, the author received invaluable academic guidance, encouragement, and support from many individuals and institutions. Therefore, the author would like to express sincere appreciation and gratitude to:

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9. All individuals who have contributed, directly or indirectly, to the successful completion of this thesis, although they cannot all be mentioned individually.

The author realizes that this thesis is not without limitations and imperfections due to the author's limited knowledge, experience, and capabilities. Therefore, the author sincerely welcomes constructive comments and suggestions from all parties to improve the quality of future academic work. May every comment and suggestion offered be rewarded by Almighty God.

The author sincerely hopes that this undergraduate thesis will provide meaningful contributions to readers, particularly to the author and future students of the Department of Nursing.

Bengkulu, 10 April, 2026
The Author,

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# *COMPARISON OF FATIGUE LEVELS AMONG CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS VIA ARTERIOVENOUS FISTULA (AVF) AND CATHETER DOUBLE LUMEN (CDL) VASCULAR ACCESS AT THE HEMODIALYSIS UNIT OF BENGKULU REGIONAL GENERAL HOSPITAL 2026*

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## ABSTRACT

***Background:*** *Fatigue is a predominant symptom among patients with chronic kidney disease (CKD) undergoing hemodialysis, with a prevalence in Indonesia ranging from 60% to 97%. The severity of fatigue is influenced by several clinical factors, one of which is the type of vascular access used, namely Arteriovenous Fistula (AVF) and Catheter Double Lumen (CDL).* ***Objective:*** *To analyze the difference in the mean level of fatigue between CKD patients undergoing hemodialysis using AVF and CDL vascular access at the Bengkulu Regional General Hospital.* ***Methods:*** *This study employed a comparative analytical observational design with a cross-sectional approach. A total of 136 respondents participated in the study, consisting of 68 patients using AVF vascular access and 68 patients using CDL vascular access. The sampling technique used was consecutive sampling. Fatigue levels were measured using the FACIT-Fatigue Scale Version 4, which has been validated for use in clinical research.* ***Results:*** *The results of the study using independent samples T-test analysis showed a significant difference in the average level of fatigue between patients using AVF and CDL vascular access. Patients with AVF access had a higher average FACIT-fatigue scale score (32.03 ± 5.89) compared to the average FACIT-fatigue scale score of patients with CDL access (24.49 ± 5.92), with a p-value of 0.000 ($p \leq 0.05$).* ***Conclusion:*** *The findings of this study indicate that patients with AVF vascular access have less severe fatigue complaints compared with patients using CDL vascular access.* ***Recommendation:*** *Nurses working in hemodialysis units are expected to routinely assess the level of fatigue in patients undergoing hemodialysis, to serve as a basis for providing self-care education at home, with the aim of minimizing fatigue-related complications and improving patients' quality of life.*

***Keywords:*** *Arteriovenous Fistula, Catheter Double Lumen, Chronic Kidney Disease, Fatigue, Hemodialysis.*

# PERBEDAAN TINGKAT *FATIGUE* PADA PASIEN GAGAL GINJAL KRONIK (GGK) YANG MENJALANI HEMODIALISIS DENGAN AKSES VASKULAR *ARTERIOVENOUS FISTULA* (AVF) DAN *CATHETER DOUBLE LUMEN* (CDL) DI RUANG HEMODIALISA RUMAH SAKIT UMUM DAERAH BENGKULU TAHUN 2026

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## ABSTRAK

**Latar belakang:** *Fatigue* adalah gejala dominan pada pasien gagal ginjal kronik (GGK) yang menjalani hemodialisis, dengan prevalensi di Indonesia sebesar 60–97%. Keparahan *fatigue* dipengaruhi oleh faktor klinis, salah satunya jenis akses vaskular, yaitu *Arteriovenous Fistula* (AVF) dan *Catheter Double Lumen* (CDL). **Tujuan:** Untuk menganalisis perbedaan rata-rata tingkat *fatigue* antara pasien GGK yang menjalani terapi hemodialisis dengan akses vaskular AVF dan CDL di Rumah Sakit Umum Daerah Bengkulu. **Metode:** Jenis penelitian ini adalah *observasional analitik komparatif* dengan desain *cross-sectional*. Sebanyak 136 responden, yaitu 68 orang menggunakan akses vaskular AVF dan 68 orang menggunakan akses vaskular CDL. Teknik pengambilan sampel dengan *consecutive sampling.* Instrumen penelitian yang digunakan untuk mengukur tingkat *fatigue* adalah kuesioner FACIT-*fatigue scale* versi 4, yang telah teruji valid untuk digunakan. **Hasil:** Hasil penelitian menggunakan analisis uji *independent samples T-test* menunjukkan adanya perbedaan yang signifikan pada rata-rata *(mean)* tingkat *fatigue* antara pasien pengguna akses vaskular AVF dan CDL. Pasien dengan akses AVF memiliki rata-rata skor FACIT-*fatigue scale* lebih tinggi (32,03 ± 5,89) dibandingkan dengan rata-rata skor FACIT-*fatigue scale* pasien dengan akses CDL (24,49 ± 5,92), dengan nilai *p-value* sebesar 0,000 *($p \leq 0,05$).* **Kesimpulan:** Hasil penelitian ini menunjukkan bahwa pasien dengan akses vaskular AVF memiliki keluhan *fatigue* lebih ringan dibandingkan dengan pasien pengguna akses vaskular CDL. **Rekomendasi:** Perawat di ruang hemodialisis diharapkan dapat melakukan penilaian tingkat *fatigue* secara rutin pada pasien hemodialisis, sebagai dasar dalam memberikan edukasi perawatan mandiri di rumah guna meminimalkan komplikasi *fatigue* dan meningkatkan kualitas hidup pasien.

**Kata kunci:** *Arteriovenous Fistula*, *Catheter Double Lumen, Fatigue*, Gagal Ginjal Kronik, Hemodialisis.

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## LIST OF ABBREVIATIONS

| | | |
|---|---|---|
| **ACE** | = | *Angiotensin-Converting Enzyme* |
| **AKI** | = | *Acute Kidney Injury* |
| **ATN** | = | *Acute Tubular Necrosis* |
| **AVF** | = | *Arteriovenous Fistula* |
| **AVG** | = | *Arteriovenous Graf* |
| **BB** | = | *Body Weight* |
| **BPJS** | = | *Social Security Administering Agency* |
| **BUN** | = | *Blood Urea Nitrogen* |
| **CDL** | = | *Catheter Double Lumen* |
| **CI** | = | *Confidence Interval* |
| **CIOMS** | = | *Council for International Organization of Medical Sciences* |
| **CKD** | = | *Chronic Kidney Disease* |
| **COPD** | = | *Chronic Obstructive Pulmonary Disease* |
| **CRBSI** | = | *Catheter-Related Bloodstream Infection* |
| **CVC** | = | *Central Venous Catheter* |
| **DDS** | = | *Dialysis Disequilibrium Syndrome* |
| **DRT** | = | *Dialysis Recovery Time* |
| **ESRD** | = | *End Stage Renal Disease* |
| **FACIT** | = | *Functional Assessment of Chronic Illness Therapy* |
| **FSS** | = | *Fatigue Severity Scale* |
| **GFR** | = | *Glomerular Filtration Rate* |
| **HB** | = | *Hemoglobin* |
| **HD** | = | *Hemodialysis* |
| **HRQOL** | = | *Health Related Quality of Life* |
| **IDF** | = | *Intradialytic Fatigue* |
| **IDWG** | = | *Interdialytic Weight Gain* |
| **KDOQI** | = | *Kidney Disease Outcomes Quality Initiative* |
| **LOA** | = | *Letter of Acceptance* |
| **NSAID** | = | *Nonsteroidal Anti-inflammatory Drugs* |
| **OSA** | = | *Obstructive Sleep Apnea* |
| **PDF** | = | *Postdialysis Fatigue* |
| **PEW** | = | *Protein Energy Wasting* |
| **PSQI** | = | *Pittsburgh Sleep Quality Index* |
| **RLS** | = | *Restless Legs Syndrome* |
| **RSUD** | = | *Regional General Hospital* |
| **SKI/IHS** | = | *Indonesia Health Survey* |