CHAPTER VII
CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

Based on the data collection, statistical analyses, and discussion presented in the preceding chapters, the study examining the differences in fatigue severity between patients with chronic kidney disease (CKD) undergoing maintenance hemodialysis using an arteriovenous fistula (AVF) and those using a catheter double lumen (CDL) as vascular access yielded the following conclusions:

1. The demographic characteristics of the respondents indicated that the majority of patients undergoing maintenance hemodialysis were female (n = 73, 53.7%), while males accounted for n = 63 (46.3%). Most respondents were in the middle-aged group (35–50 years), comprising n = 63 (46.3%). Regarding clinical characteristics, most participants had undergone maintenance hemodialysis for 1–3 years, had one to two comorbid conditions, experienced poor sleep quality, had low hemoglobin (Hb) levels (7.0 to <10.0 g/dL), and exhibited mild interdialytic weight gain (IDWG) (<4%). All baseline characteristics met the inclusion and exclusion criteria and were comparable between the two study groups, with no statistically significant differences ($p > 0.05$).
2. Of the total study participants, 68 patients (50.0%) underwent maintenance hemodialysis using an arteriovenous fistula (AVF), while the remaining 68 patients (50.0%) used a catheter double lumen (CDL) as vascular access.
3. Regarding fatigue severity, 74 respondents (54.4%) were classified as having severe fatigue. The overall mean fatigue score among all participants was 28.26 (SD = 7.00).
4. Among patients undergoing maintenance hemodialysis using an arteriovenous fistula (AVF), 47 participants (69.1%) experienced mild fatigue. The mean fatigue score in this group was 32.03 (SD = 5.89).

5. Among patients undergoing maintenance hemodialysis using a catheter double lumen (CDL), 53 participants (77.9%) experienced severe fatigue. The mean fatigue score in this group was 24.49 (SD = 5.92).
6. A statistically significant difference in mean fatigue severity was observed between patients with chronic kidney disease (CKD) undergoing maintenance hemodialysis using an arteriovenous fistula (AVF) and those using a catheter double lumen (CDL) as vascular access. The analysis demonstrated a statistically significant result ($p < 0.001$), indicating that patients using a catheter double lumen (CDL) experienced significantly greater fatigue severity than those using an arteriovenous fistula (AVF).

B. Recommendations

Based on the conclusions drawn from the findings and discussion presented in this study, the researcher proposes the following recommendations, which are expected to provide practical implications and meaningful benefits for various stakeholders.

1. For Hemodialysis Services at Regional General Hospitals in Bengkulu

   The findings of this study are expected to be utilized by submitting an executive summary to hospital management and the heads of the hemodialysis units. These findings may serve as evidence to support evidence-based practice and facilitate the revision of Standard Operating Procedures (SOPs) related to patient education. Furthermore, hospitals are encouraged to develop educational programs that promote the early transition from catheter double lumen (CDL) to arteriovenous fistula (AVF) whenever clinically appropriate, beginning at the time patients are diagnosed with chronic kidney disease. Such initiatives may contribute to reducing the risk of severe fatigue among patients undergoing maintenance hemodialysis.

2. For Nursing Education Institutions

   The findings documented in this study are expected to enrich the institution's academic resources and serve as supporting teaching materials. The evidence demonstrating the higher risk of fatigue among patients using CDL may be incorporated into case-based learning to strengthen nursing students' competencies in developing comprehensive nursing care plans, particularly in Medical–Surgical Nursing and courses related to the fulfillment of basic human needs among patients with chronic kidney disease.

3. For Study Participants

   It is recommended that patients be provided with educational materials, such as posters or leaflets, displayed in hemodialysis waiting areas. These educational resources are intended to encourage patients to independently implement energy conservation strategies, including adequate rest and appropriate regulation of daily physical activities. For patients who continue to use a CDL as vascular access, the educational materials are also expected to encourage discussions with their attending physicians regarding the clinical feasibility of transitioning to an AVF.

4. For Healthcare Professionals

   Nurses and other healthcare professionals working in hemodialysis units are encouraged to adopt the fatigue assessment instrument used in this study as part of routine nursing assessments. Integrating this instrument into continuous nursing documentation may facilitate regular fatigue screening, enabling healthcare providers to deliver more targeted supportive interventions. Particular attention should be given to patients using CDL, as they appear to be at greater risk of experiencing severe fatigue.

5. For Future Researchers

   Future researchers are encouraged to employ more robust study designs by extending the current cross-sectional approach to an analytical observational study using a prospective cohort design. Such an approach would enable a more accurate evaluation of changes in fatigue severity over

time. In addition, future studies should investigate other potential determinants of fatigue, including nutritional status, dietary adherence, psychological factors (such as stress and depression), infection risk, and hemodialysis adequacy, to provide a more comprehensive understanding of factors influencing fatigue among patients undergoing maintenance hemodialysis.