

Original Article

Overview of nursing problems in patients undergoing hemodialysis using Virginia Henderson's nursing theory approach: A descriptive study

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Abstract

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Background: Patients undergoing hemodialysis often experience complex nursing problems involving physiological, psychological, social, and spiritual dimensions. A comprehensive nursing assessment is therefore essential to identify patients' basic needs and guide holistic care. Virginia Henderson's nursing theory provides a relevant framework for assessing 14 fundamental human needs among patients with chronic kidney disease receiving hemodialysis.

Objective: This study aimed to describe nursing problems among patients undergoing hemodialysis using Virginia Henderson's nursing theory approach.

Methods: This study employed a quantitative descriptive design. The study was conducted in the Hemodialysis Unit of RSUD Siti Fatimah Az-Zahrah Palembang from June to July 2025. A total sampling technique was used, involving 35 patients who met the inclusion criteria, namely undergoing routine hemodialysis twice weekly, having received hemodialysis for more than three months, and using an arteriovenous fistula. Data were collected through interviews, physical examination, and nursing documentation review using an observation sheet based on Virginia Henderson's 14 basic human needs. Nursing problems were identified according to the Indonesian Nursing Diagnosis Standards. Data were analyzed descriptively and presented as frequencies and percentages.

Results: The mean age of respondents was 52.17 years, with a standard deviation of 11.947. Most respondents were female (51.4%), and 40% had undergone hemodialysis for more than 24 months. The most prevalent nursing problem was hypervolemia, found in all respondents (100%), followed by ineffective breathing pattern (80%), fatigue (80%), impaired urinary elimination (72%), ineffective role performance (23%), hopelessness (20%), ineffective health management (17%), and disturbed sleep pattern (17%). No nursing problem was identified in relation to worship according to personal belief.

Conclusion: Patients undergoing hemodialysis experience multiple nursing problems, predominantly related to fluid balance, respiratory function, fatigue, elimination, and psychosocial role performance. Virginia Henderson's nursing theory offers a comprehensive framework for identifying basic human needs and strengthening holistic, patient-centered nursing care in hemodialysis units.

Background

Chronic kidney disease (CKD) is a major global health problem with an increasing prevalence and is a leading cause of morbidity and mortality in many countries. Globally, approximately 850 million people are estimated to be living with kidney disease, and CKD is among the major causes of death worldwide. The Global Burden of Disease study reported that CKD-related mortality has continued to increase over the past two decades. In Indonesia, the prevalence of CKD based on the Basic Health Research (Riskesdas) report shows an upward trend with increasing age and the high burden of non-communicable diseases such as hypertension and diabetes mellitus. Data from the Indonesian Renal Registry (IRR)

also indicate an annual increase in the number of patients with end-stage renal disease (ESRD) receiving renal replacement therapy. At the local level, referral hospitals providing hemodialysis services have reported increasing numbers of visits and active hemodialysis patients, reflecting the substantial burden of CKD in the community (GBD Chronic Kidney Disease Collaboration, 2020; Ministry of Health of the Republic of Indonesia, 2018; Indonesian Renal Registry, 2023).

Hemodialysis is the most commonly used renal replacement therapy for patients with ESRD and is intended to maintain physiological function through the mechanical filtration of blood. Although hemodialysis can prolong survival, it requires a long-term commitment involving

regular treatment schedules, fluid and dietary restrictions, and adherence to medication (Al Harbi et al., 2025). These conditions may affect patients' lives in several ways, including fatigue, limitations in activities of daily living, dependence on health-care facilities, reduced work productivity, and decreased quality of life. In addition, patients undergoing hemodialysis often experience changes in their roles within the family and community because of physical limitations associated with long-term therapy (Hinkle & Cheever, 2022; Smeltzer et al., 2020).

Patients undergoing hemodialysis experience complex and multidimensional nursing problems. Physically, they commonly report fatigue, pain, sleep disturbances, pruritus, edema, nausea, vomiting, and activity intolerance. From a psychological perspective, anxiety, depression, stress, and uncertainty about health status are frequently observed in this population (Sari et al., 2026). Socially, patients may experience limited social interaction, changes in social roles, reduced productivity, and financial problems related to treatment costs and job loss. The spiritual dimension is also important because patients may experience a crisis of meaning, changes in beliefs, and a need to strengthen spiritual coping when living with a chronic illness. The complexity of these problems requires a comprehensive and holistic nursing approach to address patients' needs as a whole (Black & Hawks, 2021; Ignatavicius et al., 2023).

Virginia Henderson's nursing theory emphasizes that the primary focus of nursing is to assist individuals, whether healthy or ill, in meeting their basic needs so that they can achieve optimal independence. Henderson identified 14 basic human needs, including breathing, eating and drinking, elimination, mobility, rest and sleep, dressing, maintaining body temperature, personal hygiene, safety, communication, worship according to one's beliefs, work, recreation, and learning. In patients undergoing hemodialysis, this theory is relevant as an assessment framework because it can identify disturbances in basic needs arising from CKD and hemodialysis therapy. The use of Henderson's theory enables nurses to conduct a holistic assessment and to design more targeted interventions to improve patients' independence and quality of life (Henderson, 1966; Alligood, 2022).

Previous studies have examined quality of life, anxiety levels, treatment adherence, and physical problems among patients undergoing hemodialysis. However, studies that comprehensively identify the basic needs of hemodialysis patients using Virginia Henderson's theoretical framework remain limited, particularly in the context of nursing practice in Indonesia. Most previous research has focused on only one or two aspects of patient needs and therefore has not provided a comprehensive picture of the fulfillment of Henderson's 14 basic needs. The novelty of this study lies in its holistic assessment of the basic needs of patients undergoing hemodialysis using Virginia Henderson's theory as the conceptual framework. The findings are expected to provide a foundation for nurses in developing more comprehensive, patient-centered nursing care.

This study aimed to describe the fulfillment of basic needs among patients undergoing hemodialysis based on Virginia Henderson's 14 basic human needs.

Methods

Study Design

This study used a descriptive quantitative design (Ansori, 2020). Virginia Henderson's nursing theory was used as the conceptual framework to identify and describe nursing problems among patients undergoing hemodialysis. The assessment was conducted based on Henderson's 14 basic human needs to provide a comprehensive overview of the condition of hemodialysis patients. The study was conducted in the Hemodialysis Unit of Siti Fatimah Az-Zahrah Regional Hospital, Palembang, from June to July 2025.

Sampling

The study population comprised all patients undergoing hemodialysis in the Hemodialysis Unit of Siti Fatimah Az-Zahrah Regional Hospital, Palembang. Based on patient visit data for the previous three months (January to March 2025), 35 patients were receiving hemodialysis. Total sampling was applied, meaning that all members of the population who met the inclusion criteria were included as study participants. The inclusion criteria were

patients who routinely underwent hemodialysis twice weekly, had been receiving hemodialysis for more than three months, and used arteriovenous fistula (Cimino) vascular access. The exclusion criteria were unstable hemodynamic status and the use of a central dialysis line (CDL).

Instruments

The instrument used in this study was an observation sheet developed based on Virginia Henderson's nursing theory. The observation sheet was used to assess the 14 basic human needs covering physiological, psychological, social, and spiritual aspects. The instrument consisted of 14 assessment items designed to identify the fulfillment of basic needs among patients undergoing hemodialysis. Nursing problems were determined with reference to the Indonesian Nursing Diagnosis Standards (Standar Diagnosis Keperawatan Indonesia/SDKI) issued by the Indonesian National Nurses Association (PPNI, 2017). Data were collected directly from respondents through interviews, physical examinations, and reviews of nursing documentation.

Data Collection

The data collected included respondents' characteristics, such as age, sex, and hemodialysis history, as well as data related to nursing problems identified through the assessment. All data were systematically documented throughout the research process. The data were analyzed using descriptive quantitative analysis. Respondents' characteristics and identified nursing problems

were presented as frequency distributions and percentages.

Data Analysis

The analysis was conducted to describe the profile of hemodialysis patients based on demographic characteristics and nursing problems identified using Virginia Henderson's nursing theory. The results were then presented in tables and narrative form to facilitate data interpretation.

Ethical Considerations

This study was conducted in accordance with research ethics principles, including respect for human dignity, beneficence and nonmaleficence, justice, and confidentiality. Before data collection, respondents were informed about the study objectives, benefits, and procedures and were given the opportunity to provide voluntary consent to participate. All data obtained were kept confidential and used solely for research purposes.

Results

A total of 35 patients undergoing hemodialysis in the Hemodialysis Unit of Siti Fatimah Az-Zahrah Regional Hospital, Palembang, participated in this study. Respondent characteristics were analyzed according to age, sex, and hemodialysis history. In addition, this study identified nursing problems based on an assessment using Virginia Henderson's nursing theory. The distributions of respondent characteristics and nursing problems based on Virginia Henderson's theory are presented below.

Table 1. Distribution of Respondent Characteristics (n = 35)

| Variable | Mean | SD |
|------------------------------|------------------|-------------------|
| Age | 52.17 | 11.947 |
| Sex | Frequency | Percentage |
| Female | 18 | 51.4 |
| Male | 17 | 48.6 |
| Hemodialysis duration | Frequency | Percentage |
| New <12 months | 12 | 34.3 |
| Intermediate 12-24 months | 9 | 25.7 |
| Long-term >24 months | 14 | 40.0 |
| Total | 35 | 100 |

Table 1 shows that the respondents had a mean age of 52.17 years with a standard deviation of 11.947. The sex distribution consisted of 18 women (51.4%) and 17 men (48.6%). Regarding hemodialysis history, 12 respondents

(34.3%) had undergone hemodialysis for less than 12 months, 9 respondents (25.7%) for 12-24 months, and 14 respondents (40.0%) for more than 24 months.

Table 2. Distribution of Nursing Problems Based on Virginia Henderson's Nursing Theory

| No. | Basic Needs (Virginia Henderson) | Nursing Problems | n | % |
|-----|---|-------------------------------|----|-----|
| 1 | Breathe normally. | Ineffective breathing pattern | 28 | 80 |
| 2 | Eat and drink adequately. | Nutritional deficit | 1 | 3 |
| 3 | Eliminate body wastes. | Hypervolemia | 35 | 100 |
| 3 | Eliminate body wastes. | Impaired urinary elimination | 26 | 72 |
| 4 | Move and maintain desirable postures. | Fatigue | 28 | 80 |
| 4 | Move and maintain desirable postures. | Impaired physical mobility | 5 | 14 |
| 5 | Rest and sleep. | Disturbed sleep pattern | 6 | 17 |
| 6 | Select suitable clothes; dress and undress. | Self-care deficit | 2 | 6 |
| 7 | Maintain body temperature within the normal range by adjusting clothing and modifying the environment. | Hyperthermia | 1 | 3 |
| 8 | Keep the body clean and well groomed and protect the integument. | Impaired skin integrity | 3 | 9 |
| 9 | Avoid environmental dangers and avoid injuring others. | Risk for falls | 2 | 6 |
| 10 | Communicate with others in expressing emotions, needs, fears, or opinions. | Impaired social interaction | 4 | 11 |
| 11 | Worship according to one's beliefs. | - | 0 | 0 |
| 12 | Work in such a way that there is a sense of accomplishment. | Hopelessness | 7 | 20 |
| 13 | Play or participate in various forms of recreation. | Ineffective role performance | 8 | 23 |
| 14 | Learn, discover, or satisfy curiosity that leads to normal development and health, and use available health facilities. | Ineffective health management | 6 | 17 |

Based on the distribution of nursing problems, the nursing problems identified using Virginia Henderson's nursing theory and the Indonesian Nursing Diagnosis Standards, according to major and minor defining characteristics, were as follows: (1) ineffective breathing pattern, 28 respondents (80.0%); (2) nutritional deficit, 1 respondent (3.0%); (3) hypervolemia, 35 respondents (100.0%), and impaired urinary elimination, 26 respondents (72.0%); (4) fatigue, 28 respondents (80.0%), and impaired physical mobility, 5 respondents (14.0%); (5) disturbed sleep pattern, 6 respondents (17.0%); (6) self-care deficit, 2 respondents (6.0%); (7) hyperthermia, 1 respondent (3.0%); (8) impaired skin integrity, 3 respondents (9.0%);

(9) risk for falls, 2 respondents (6.0%); (10) impaired social interaction, 4 respondents (11.0%); (11) worship according to one's beliefs: no problems were reported in this category; (12) hopelessness, 7 respondents (20.0%); (13) ineffective role performance, 8 respondents (23.0%); and (14) ineffective health management, 6 respondents (17.0%).

Discussion

This study found that the mean age of respondents was 52.17 years (SD = 11.947), indicating a population in late adulthood approaching older age. The sex distribution was relatively balanced, with women being slightly more dominant (51.4%). These characteristics

may influence patients' understanding of disease management. This finding is consistent with literature indicating that age and education influence patients' adaptation to chronic diseases, including CKD (Isnayati et al., 2020).

Based on the findings using Virginia Henderson's 14 basic human needs framework, various nursing problems were identified with differing frequency distributions. The most frequently identified problem was hypervolemia, which occurred in 100% of respondents, followed by impaired urinary elimination (72%). These findings indicate that fluid management should be a major priority in patient care to prevent serious complications. Indicators for assessing hypervolemia in hemodialysis patients can be evaluated based on signs and symptoms of excess fluid volume. Assessment may be conducted through observation, physical examination, and supporting data. The signs and symptoms identified among respondents included edema of the extremities or generalized edema, increased interdialytic weight gain, shortness of breath or dyspnea, and increased blood pressure. Impaired urinary elimination was indicated by oliguria or decreased urine output, altered urinary frequency, and difficulty urinating (PPNI, 2017). This finding is consistent with the study by Al Falah Rifqi, Khasanah, and Maryoto (2024) on nursing care for hypervolemia in patients with chronic kidney failure.

The second most dominant nursing problem was ineffective breathing pattern, which occurred in 80% of respondents. This condition requires immediate attention, such as oxygen administration or other interventions to maintain optimal respiratory function, particularly in patients undergoing hemodialysis who may experience fluid retention and elimination disorders (Siregar, 2020). Indicators for assessing ineffective breathing pattern in hemodialysis patients include changes in respiratory rate, rhythm, and depth, as well as signs of impaired ventilation. Assessment was conducted through observation and physical examination. The signs and symptoms identified among respondents included increased respiratory

rate, irregular breathing rhythm, use of accessory respiratory muscles, dyspnea, shallow breathing, adventitious breath sounds, decreased oxygen saturation, and asymmetrical chest expansion (PPNI, 2017). This finding is in line with the study by Anggraini and Fadila (2022) on the quality of life of patients with chronic kidney failure undergoing dialysis.

Fatigue among patients undergoing hemodialysis is a subjective nursing problem characterized by weakness, lack of energy, decreased ability to perform activities, and physical or mental tiredness, which are commonly experienced by patients with CKD (Aneja & Fatrida, 2026). Fatigue in hemodialysis patients may be caused by anemia, accumulation of metabolic waste products, fluid and electrolyte imbalance, the long duration of hemodialysis sessions, sleep disturbances, and declining physical condition due to chronic illness (Siregar, 2020). The finding that 80% of respondents experienced fatigue indicates that most hemodialysis patients had limited energy for performing activities of daily living. This condition may reduce quality of life, decrease productivity, restrict social activities, and increase dependence on others in meeting daily needs. Fatigue was assessed through interviews and observation using indicators such as weakness, easy fatigability, reduced activity tolerance, increased need for rest, and limitations in activities of daily living. This finding is consistent with the study by Fari et al. (2019), which reported that all respondents with CKD experienced fatigue at mild, moderate, or severe levels after assessment of progressive muscle relaxation and relaxation breathing exercise interventions.

Ineffective role performance was identified in 23% of patients. This problem indicates barriers to social participation and daily roles, requiring interventions to improve patients' involvement in social activities (PPNI, 2017). Hopelessness was also relatively common, occurring in 20% of patients, highlighting the need for psychosocial support to improve the emotional well-being of hemodialysis patients. Hopelessness in this population is often related to lifestyle changes, dependence on the hemodialysis machine, and uncertainty regarding prognosis. Appropriate

interventions may therefore help improve patients' quality of life.

Other problems, such as ineffective health management (17%) and disturbed sleep pattern (17%), emphasize the importance of health education and interventions to support patients' need for rest. Relaxation therapy, sleep aids, or environmental modifications may help reduce sleep disturbances (Potter & Perry, 2017). Impaired physical mobility (14%) also requires attention, particularly to prevent complications such as pressure injuries or falls. A physical rehabilitation approach involving light exercise, physical therapy, or mobility aids may improve movement ability and prevent further functional decline (Budiono, 2015). Problems with lower prevalence, such as impaired skin integrity (9%), impaired social interaction (11%), and risk for falls (6%), still require management even though their frequency was lower than that of other problems. According to Henderson, psychosocial health is essential to support holistic patient recovery (Mait, Nurmansyah, & Bidjuni, 2021). This study is consistent with Mait et al. (2021), who reported that patients with CKD often face social stigma and decreased quality of life due to physical and economic limitations. Therefore, interventions that include emotional and social support are needed to improve patient adaptation (PPNI, 2017).

Meanwhile, patients' spiritual needs appeared to be fulfilled because no problems were identified in worship according to their beliefs. This finding suggests that the spiritual aspect was not a barrier to the fulfillment of basic needs among patients with CKD undergoing hemodialysis. Spiritual needs were assessed using indicators of the ability to meet spiritual needs, including the ability to worship according to one's beliefs, pray, draw closer to God, obtain inner peace, maintain hope and meaning in life, and accept one's health condition. Assessment was conducted through interviews with respondents regarding the fulfillment of spiritual aspects in daily life during treatment or hemodialysis (PPNI, 2017).

Overall, these findings highlight the importance of a holistic nursing approach that addresses patients' physical, psychological, social, and educational needs. Priority interventions should focus on problems with high prevalence, such as hypervolemia and impaired urinary elimination, ineffective breathing pattern, fatigue, and ineffective role performance. Collaboration among nurses, patients, and families is essential to improving patients' quality of life.

Conclusion and Recommendation

The characteristics of respondents undergoing hemodialysis showed a mean age of 52.17 years, with 18 women (51.4%) and 14 respondents (40.0%) having undergone hemodialysis for more than 24 months. Nursing problems among patients undergoing hemodialysis, identified using Virginia Henderson's 14 basic human needs framework, included ineffective breathing pattern, hypervolemia, impaired urinary elimination, fatigue, hopelessness, and ineffective role performance. These findings suggest that nurses in hemodialysis units should collaborate with other health-care professionals, including physicians, nutritionists, and psychologists, to provide holistic care. Future studies are recommended to improve the research design by implementing nursing care interventions based on Virginia Henderson's theoretical approach for patients undergoing hemodialysis.

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Declaration of conflict of interest

The authors declare no competing interests.

Declaration on the Use of AI

The authors declare that no artificial intelligence tools were used in the preparation, writing, or editing of this manuscript.

Data Availability Statement

Data sharing is not applicable to this article.

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