Overview of Demographic Characteristics, Hemodialysis Frequency, and Disease History in Chronic Kidney Failure (CKD) Patients at Bahteramas Kendari Hospital

Gambaran Karakteristik Demografi, Frekuensi Hemodialisis, dan Riwayat Penyakit pada Pasien Gagal Ginjal Kronis (PGK) di RSUP Bahteramas Kendari

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ABSTRACT

Background: End-stage chronic kidney failure (CKD) requires routine hemodialysis, where the demographic profile, frequency, and history of the disease affect the effectiveness of therapy and the patient's prognosis. **Objective:** Describe the demographic characteristics, frequency, and duration of hemodialysis, and disease history of CKD patients undergoing hemodialysis at Bahteramas Kendari Hospital in 2023. **Methods:** A cross-sectional observational descriptive study with 56 respondents (purposive sampling) in the hemodialysis room of Bahteramas Kendari Hospital for the period of April 28–May 24, 2023. Primary data from demographic questionnaires, observations, and interviews were analyzed using univariate frequency/percentage in SPSS 25, after informed and ethical consent. **Results:** The majority of respondents were 51-60 years old (30.4%), male (53.8%), married (69.5%), IRT (33.9%), and had a high school education (33.9%). HD frequency 2x/week (91.1%), duration <1 year (48.2%). The main history of hypertension (41.1%), hypertension & DM (17.9%), and DM (7.2%). **Conclusions:** The profile of hemodialysis CKD patients is dominated by male patients in the productive age with metabolic-vascular comorbidities in the initial therapy phase, supporting early screening based on local data. **Suggestion:** Intensify hypertension-DM screening, compliance education, and advanced cohort research.

ABSTRAK

Latar Belakang: Gagal ginjal kronis (PGK) stadium akhir memerlukan hemodialisis rutin, di mana profil demografi, frekuensi, dan riwayat penyakit memengaruhi efektivitas terapi dan prognosis pasien. **Tujuan:** Menggambarkan karakteristik demografi, frekuensi serta durasi hemodialisis, dan riwayat penyakit pasien PGK yang menjalani hemodialisis di RSUP Bahteramas Kendari tahun 2023. **Metode:** Studi deskriptif observasional cross-sectional dengan 56 responden (purposive sampling) di ruang hemodialisis RSUP Bahteramas Kendari periode 28 April–24 Mei 2023. Data primer dari kuesioner demografi, observasi, dan wawancara dianalisis univariat frekuensi/persentase menggunakan SPSS 25 setelah informed consent dan persetujuan etik. **Hasil**: Mayoritas responden berusia 51-60 tahun (30,4%), laki-laki (53,8%), menikah (69,5%), IRT (33,9%), pendidikan SMA (33,9%). Frekuensi HD 2x/minggu (91,1%), durasi <1 tahun (48,2%). Riwayat utama hipertensi (41,1%), hipertensi & DM (17,9%), DM (7,2%). **Kesimpulan**: Profil pasien PGK hemodialisis didominasi usia produktif laki-laki dengan komorbiditas metabolik-vaskular pada fase terapi awal, mendukung skrining dini berbasis data lokal. **Saran:** Intensifkan skrining hipertensi-DM, edukasi kepatuhan, dan riset kohort lanjutan.

INTRODUCTION

Chronic Kidney Disease (CKD) is a disorder of kidney function that progressively decreases to the point of failing to filter electrolytes, maintain the balance of body fluids and chemicals, and produce urine as it should, so that it becomes a global public health problem with an increasing incidence and prevalence. This condition is defined as abnormalities of abnormal kidney structure or function over more than three months, including categories based on etiology in healthy individuals, glomerular filtration rate, and albuminuria, with the main criteria being albumin excretion >30 mg/day or eGFR <60 ml/min during ≥3 months, or other signs of kidney damage [1, 2].

Hemodialysis (HD) is a form of kidney replacement therapy accounting for about 69% of all kidney replacement therapies and 89% of all dialysis. Despite significant improvements, patients undergoing HD still face a low quality of life with a high burden of disease, physical, financial, morbidity, and mortality. HD was chosen as the main treatment because it can optimize patient function and extend life expectancy [3, 4].

Although dialysis technology and patient access are rapidly evolving, variations in the availability, accessibility, cost, and effectiveness of HD remain a major challenge. Cardiovascular disease accounts for two-thirds of the major causes of morbidity and nearly 50% of deaths in HD patients, accompanied by a high burden of symptoms and severe financial stress. Despite advances in HD technology, poor clinical outcomes in patients remain a crucial global public health issue. Hemodialysis is a kidney replacement therapy that uses a device to remove excess fluids, toxins, and metabolic waste products, while balancing fluids, electrolytes, and blood pressure. This process lasts 3-4 hours, 3-4 times a week, for both short-term acute cases (such as poisoning or fluid overload) and long-term chronic cases of end-stage renal disease [3, 5].

Hemodialysis plays a role in filtering residual substances and excess fluid from the patient's blood, with a duration per session of 3-4 hours which is carried out 3-4 times a week, both in dialysis centers, hospitals for complications, and at home. In Indonesia, HD remains the primary kidney replacement therapy for patients with chronic kidney failure rather than CAPD or kidney transplantation. Chronic kidney disease patients who undergo hemodialysis, experience a high burden of functional impairments, limited life expectancy, health services, complications that cause various psychological problems such as depression and anxiety [6].

Hemodialysis patients often face severe physical and psychological stress because their hospitalizations are 1.5-3 times more frequent than other chronic disease patients, plus the obligation to adjust fluid intake restrictions, diet, financial burden, dialysis machine noise disturbances, and regular hospital visits (They also experience physical discomfort such as nausea, vomiting, hypotension, fatigue, as well as mental problems in the form of anxiety and depression influenced by environmental factors such as temperature room, life-threatening diagnosis, lifelong therapy, integration of treatment into daily routines, and lack of treatment success [7].

Life patterns affect the characteristics of chronic kidney failure (CKD) patients, which can be observed from various aspects such as age, gender, duration of hemodialysis, and others. This characteristic serves as an early detection of CKD for rapid treatment to prevent or slow down complications.8. Based on demographic data, the incidence of kidney failure in men is twice as high as in women due to their susceptibility to systemic diseases such as diabetes mellitus, hypertension, glomerulonephritis, polycystic kidneys, lupus, as well as a passed family history, where a poor lifestyle in men can increase the risk of CKD. The longest duration of hemodialysis was in the range of 1 month to 1 year; new patients undergoing HD for several months were much more dominant than those who had been on therapy for many years [8].

This study addresses the absence of local epidemiological data on the demographic profile, hemodialysis frequency, and disease history of CKD patients in Southeast Sulawesi, particularly at Bahteramas Kendari Hospital, which is not yet represented in national registries or regional reports. By providing a detailed univariate description of patient characteristics, this study provides baseline local evidence to inform risk stratification, planning of hemodialysis capacity, and targeting of hypertension–diabetes screening programs at the hospital and provincial levels. Therefore, the objective of this study is not only to describe demographic characteristics, frequency, and duration of hemodialysis, and disease history of CKD patients undergoing hemodialysis at Bahteramas Kendari Hospital in 2023, but also to supply locally specific data that can be used as a reference for optimizing HD services and developing regionally tailored nephrology policies.

METHODS

The design of this study is an observational descriptive study with a cross-sectional approach, namely, describing the demographic characteristics, hemodialysis frequency, and disease history of chronic kidney failure patients at a single point in time. The research was conducted in the hemodialysis room of Bahteramas Hospital, Kendari City, during April 28 – May 24, 2023, with a population of all

chronic kidney failure patients undergoing hemodialysis who were invited to participate and were cooperative (a total of 56 respondents). Sampling was conducted using a purposive sampling method, with inclusion criteria: patients diagnosed with CKD undergoing routine hemodialysis, aged ≥18 years, and conscious and cooperative; and exclusion criteria: patients who are uncooperative or unable to complete questionnaires. Primary data were collected through demographic questionnaires, observation sheets, and interviews, after informed consent. Data processing used IBM SPSS Statistics 25, with univariate analysis presented as frequency and percentage distributions in tables and narratives. The research ethics have been approved by the Health Research Ethics Committee of Bahteramas Kendari Hospital.

RESULTS

This study was conducted in the hemodialysis room of Bahteramas General Hospital, Kendari City, from April 28, 2023, to May 24, 2023, and included 56 respondents who were invited to participate and were cooperative. Data collection was carried out by explaining the patient's availability to provide informed consent to complete questionnaires, observation sheets, and interviews. Furthermore, the data processing stage is carried out using the SPSS program.

Table 1. Distribution of Age Frequency in Patients at Bahteramas General Hospital

Age	Frequency (people)	Percentage (%)
20-30 years	7	12.5
31-40 years old	13	23.2
41-50 years old	9	16.0
51-60 years old	17	30.4
>65 years old	10	17.9
Total	**56**	**100.0**

Based on the table of age categories of chronic kidney failure patients undergoing hemoialisis above, it can be seen from the 56 respondents who were sampled, 7 people (12.5%) aged 20-30 years, there were 13 people (23.25%) aged 31-40 years, 9 people (16.1%) aged 41-50 years, 17 people (30.4%) aged 51-60 years and 10 people (17.9%) aged >65 years. From the data above, it can be seen that the most frequent distribution is respondents aged 51-60 years who undergo hemodialysis at Bahteramas General Hospital in Kendari City.

Table 2. Distribution of Gender Frequency in Patients at Bahteramas General Hospital

Gender	Frequency (people)	Percentage (%)
Male	30	53.8
Women	26	46.4
Total	**56**	**100.0**

Based on the gender table above, of the 56 respondents sampled, 30 (53.8%) were male, and 26 (46.4%) were female. It can be seen that the majority of respondents are male patients undergoing hemodialysis at Bahteramas General Hospital, Kendari City.

Table 3. Distribution of work frequency in patients at Bahteramas General Hospital

Jobs	Frequency (people)	Percentage (%)
Self-employed	15	26.8
PNS	16	28.6
IRT	19	33.9
Others	6	10.7
Total	**56**	**100.0**

Based on the job table above, it is known that the 56 respondents who were sampled were 15 people (26.8%) who worked as self-employed, 16 people (28.6%) who worked as civil servants, 19 people (33.9%) who worked as IRTs, and 6 people (10.7%) who had other jobs. So it can be seen that the distribution of the most work frequencies is among respondents who already work as IRTs.

Table 4. Frequency distribution of education level in patients at Bahteramas General Hospital

Education Level	Frequency (people)	Percentage (%)
No School	3	5.4
SD	13	23.2
Junior High School	7	12.5
High School	19	33.9
College	14	25.0
Total	**56**	**100.0**

Based on the table of education levels above, it is known that the 56 respondents who were sampled included 3 people (5.4%) who did not attend school, 13 people (23.2%) who were at the elementary level, 7 people (12.5%) who were at the junior high school level, 19 people (33.9%) who were at the high school level, and 14 people (25.0%) who were in college. So the highest distribution of education frequencies is among respondents who are at the high school level.

Table 5. Distribution of long frequencies undergoing HD, HD frequency and disease history in patients at Bahteramas General Hospital

Characteristics		Frequency (people)	Percentage (%)
HD Frequency			
a.	1x a week	5	8.9
b.	2x a week	51	91.1
	Total	**56**	**100.0**
Long Live HD			
a.	< 1 year	27	48.2
b.	1-2 years	15	26.8
c.	2-3 years	3	5.4
d.	3-4 years	11	19.6
	Total	**56**	**100.0**
Disease History			
a.	None	16	28.6
b.	Hypertension & DM	10	17.9
c.	Hypertension	23	41.1
d.	DM	4	7.2
e.	Kidney stones	1	2.8
f.	Gout	2	3.6
	Total	**56**	**100.0**

Based on the frequency table above, it is known that the majority of HD frequency of respondents is 2x a week, as many as 51 respondents (91.1%). The majority of respondents underwent HD for <1 year, as many as 27 people (48.2%). The majority of respondents had a history of hypertension, as many as 23 people (41.1%), hypertension & DM, as many as 10 people (17.9%), and DM, as many as 4 people (7.2%).

DISCUSSION

Research in the hemodialysis room of Bahteramas Kendari Hospital for the period of April 28–May 24, 2023 succeeded in recruiting 56 cooperative respondents, with primary data collection through informed consent, demographic questionnaires, observations, and interviews processed using SPSS for univariate analysis. The age distribution showed the 51-60 year group as the highest (17 respondents; 30.4%), reflecting the burden of CKD in advanced productive age who are often exposed to chronic risk factors such as hypertension. These findings are consistent with the national prevalence where an aging population increases the incidence of CKD. This age pattern emphasizes the need for early screening among middle-aged people[3, 9, 10].

The age group of 31-40 years followed with 13 respondents (23.25%), indicating the early onset of CKD influenced by urban lifestyle in Kendari, while the age group of 20-30 years was only 7 respondents (12.5%). The 41-50 year range (9 respondents; 16.1%) and >65 years (10 respondents; 17.9%) complete the distribution, with the majority remaining in middle age. A similar study in Indonesia found a similar age pattern, where 30-40% of HD patients were in the range of 50-60 years. This age dominance affects the planning of long-term dialysis services. The high distribution of ages 51-60 years correlates with a history of hypertension, as aging accelerates the progression of CKD in this group. The prevalence of 30.4% of the age exceeds the national average, emphasizing routine hypertension screening in South Sulawesi. The integration of demographic data with clinical history supports risk prediction[1, 5, 11].

By gender, men dominated with 30 respondents (53.8%), while women 26 respondents (46.4%), consistent with a national trend where men are twice as vulnerable to CKD due to systemic risk exposure. The incidence in men is due to hypertension and diabetes which are predominant, as reported in the Indonesian nephrology registry. This imbalance suggests gender-specific interventions in prevention. The dominance of men with a systemic history such as hypertension confirms gender susceptibility, where men have an odds ratio of 1.8 for end-stage CKD. This combination affects the allocation of gender-based HD resources in the hospital. The findings reinforce the educational needs of men of productive age[2, 4, 12, 13].

Marital status showed that the majority of respondents were married as many as 39 people (69.5%), providing potential social support for HD therapy adherence. Single only 7 respondents (12.5%), while widows/widowers each had 5 respondents (8.9%), reflecting the burden of CKD on the nuclear family in the Kendari community. Marriage support has been shown to increase the survival of dialysis patients by up to 20%. This pattern is relevant for family education programs in CKD management. Marital status was positively associated with the duration of HD <1 year, as partner support increased early adherence to therapy. However, the dominant IRT (33.9%) faced a heavier financial burden than DM comorbidities. Social support has been shown to reduce dropouts by 25%. This profile is ideal for community intervention[13, 14].

The respondents' jobs were dominated by IRTs with 19 people (33.9%), followed by civil servants with 16 people (28.6%) and self-employed people with 15 people (26.8%), while others 6 people (10.7%). The dominance of IRT shows a limited economic impact on household groups, which often experience barriers to regular HD access. A study in Sulawesi found informal employment correlated with dialysis dropouts. This data supports cost subsidies for vulnerable workers[15].

The highest level of education was in high school with 19 respondents (33.9%), followed by universities with 14 respondents (25.0%), elementary school with 13 respondents (23.2%), junior high school with 7 respondents (12.5%), and non-school with 3 respondents (5.4%). Secondary education dominates, influencing the understanding of diet and HD adherence in Kendari. The level of higher education is related to the early detection of CKD, reducing the final stage by 15%. High school

education facilitates the understanding of HD frequencies 2x/week, although the short duration (<1 year) signals late diagnosis. Integration of education with a history of gout/rare kidney stones (7.4%) suggests primary prevention. These univariate data are the baseline for multivariate follow-up studies. Further analysis is needed. This profile is ideal for kidney health literacy campaigns. The frequency of hemodialysis is the majority 2 times a week with 51 respondents (91.1%), only 5 respondents (8.9%) 1 time a week, according to the guidelines of the Indonesian Ministry of Health for optimal homeostasis. This standard frequency reduces the risk of acute uremia, although it increases the burden of transportation in Kendari. High-frequency compliance reflects good service access at Bahteramas Hospital[6, 16].

The frequency of hemodialysis is the majority 2 times a week with 51 respondents (91.1%), only 5 respondents (8.9%) 1 time a week, according to the guidelines of the Indonesian Ministry of Health for optimal homeostasis. This standard frequency reduces the risk of acute uremia, although it increases the burden of transportation in Kendari. The high-frequency compliance reflects good service access at Bahteramas Hospital. The duration of hemodialysis was the most <1 year as many as 27 respondents (48.2%), indicating an influx of new patients with end-stage CKD in the South Sulawesi region. The duration was 1-2 years for 15 respondents (26.8%), 3-4 years for 11 respondents (19.6%), and 2-3 years for 3 respondents (5.4%). New patients are prone to adaptation complications, with a 20% dropout within the first year. This data is crucial for HD onboarding programs[17].

The history of disease without comorbidities reached 16 respondents (28.6%), highlighting primary CKD cases in Kendari. Hypertension was dominant in 23 respondents (41.1%), followed by hypertension & DM in 10 respondents (17.9%), DM alone in 4 respondents (7.2%), kidney stones in 1 respondent (1.8%), and gout in 2 respondents (3.6%). Hypertension as the main trigger is in line with the 2018 Riskesdas. This comorbidity increases HD mortality by 2-3 times[18] Overall, 91.1% of the optimal HD frequency compared to the history of hypertension of 41.1% showed good comorbidity control at Kendari Hospital. However, 48.2% of the duration of <1 year requires new patient retention efforts. These findings contribute to the local epidemiology of CKD. This data baseline is strategic for regional policy. The demographic profile with middle age, dominant male, and vascular comorbidities formed a typical pattern of CKD in Kendari, supporting the allocation of 2 weekly HD sessions. The importance of this data in the prevention of cardiorenal complications, with national implications for the Indonesian HD registry. This study enriched the locally-based evidence[19, 20].

CONCLUSIONS AND SUGGESTIONS

The majority of chronic kidney failure patients undergoing hemodialysis at Bahteramas Kendari Hospital in 2023 are middle-aged, male, married, working as housewives, and having a high secondary education. The frequency of hemodialysis twice a week dominated with a duration of therapy of less than one year being the highest, while the main disease history consisted of hypertension, a combination of hypertension and diabetes mellitus, and diabetes mellitus alone. This characteristic profile describes the local epidemiological pattern of end-stage chronic kidney disease in the productive age group with predominance of vascular-metabolic comorbidities, thus providing an important basis for early risk identification as well as optimization of hospital data-driven therapy management strategies.

Bahteramas Hospital is recommended to develop a routine screening program for hypertension and diabetes mellitus in the population at risk of middle age, especially men in Southeast Sulawesi, to detect chronic kidney failure early and slow the progression to the hemodialysis stage, accompanied by intensive education on therapy adherence for new patients by involving family support for married patients and easy access to subsidies for housewives and informal workers to reduce the dropout rate therapy, as well as encouraging follow-up research with a prospective cohort design to analyze the predictive factors of complications based on the demographic profile and history of the disease that has been identified.

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