
Increasing Knowledge About Chronic Kidney Disease In Family Members Of Inpatients At Haji Regional Hospital, East Java Province

Een Hendarsih¹⁾, Akbar Pandu Wahyono^{2)*}, Alifannisa Hasnur Islamy³⁾, Dewfi Zhafira Rizqiyah Tabriz⁴⁾, Fyna Amanah⁵⁾, Ulil Amri Mufidah Haniyah⁶⁾

^{1,3,4,5,6)} Department of Internal Medicine, Haji Regional Hospital, East Java Province, Faculty of Medicine, Muhammadiyah University of Malang

²⁾ Medical Faculty University of Muhammadiyah Malang, East Java, Indonesia

*Corresponding Author

Email: akbarr.whyy@gmail.com

Abstract

Chronic kidney disease is a major public health problem in Indonesia, with increasing prevalence and incidence, poor prognosis, and high treatment costs. Limited public knowledge contributes to low awareness of early detection and prevention of this disease. This study aimed to assess the effectiveness of a health education intervention in improving knowledge of chronic kidney disease among family members of inpatients at Haji Regional Hospital, East Java Province. An educational program was conducted using PowerPoint presentations and leaflets, followed by formative evaluation through pretest and posttest assessments. A one-group pretest–posttest design was applied, and data were analyzed using a paired t-test with SPSS software. The results showed a statistically significant improvement in participants' knowledge after the educational intervention ($p < 0.05$). The mean pretest score was 78.46, which increased to 94.62 in the posttest. These findings indicate that hospital-based health education effectively improves knowledge of chronic kidney disease among patients' family members and may support early detection and prevention efforts.

Keywords: Knowledge, Chronic Kidney Disease, Haji Hospital, East Java Province

INTRODUCTION

Chronic kidney disease (CKD) is a progressive and irreversible condition that, if left untreated, ultimately requires renal replacement therapy (RRT) such as dialysis or kidney transplantation. CKD is defined as structural or functional abnormalities of the kidneys persisting for more than three months with implications for health. This condition is characterized by a glomerular filtration rate (GFR) of less than 60 mL/min/1.73 m² or the presence of one or more markers of kidney damage, including albuminuria (Charles & Ferris, 2020).

In Indonesia, the prevalence and incidence of CKD continue to increase, accompanied by poor prognosis and high healthcare costs. Data from the 2018 Basic Health Research (RISKESDAS) reported that CKD prevalence in Indonesia was 0.38%, equivalent to 3.8 per 1,000 population (Kementerian Kesehatan Republik Indonesia, 2018). National data from the Ministry of Health indicate that the prevalence of CKD in Indonesia is 0.38%, equivalent to 3.8 per 1,000 population, and approximately 60% of patients with kidney failure require dialysis (Kementerian Kesehatan Republik Indonesia, 2023).

The kidneys play a vital role in maintaining body homeostasis, including regulation of fluid and electrolyte balance, acid–base equilibrium, and excretion of metabolic waste and toxic substances (Inker et al., 2014). In addition, the kidneys function as endocrine organs that produce hormones such as renin, erythropoietin, and prostaglandins (Shahbazi et al., 2024). Impairment of kidney function leads to a progressive decline in these regulatory processes, which may result in acute or chronic kidney failure. Chronic kidney failure is characterized by the inability of the kidneys to maintain normal metabolic and fluid–electrolyte balance, and if inadequately managed, it may progress to severe kidney damage with a high risk of mortality (Mallamaci & Tripepi, 2024; Aregawi et al., 2024).

Chronic kidney disease is a complex global health problem with multiple interrelated risk factors. Traditional risk factors such as hypertension, diabetes mellitus, obesity, and dyslipidemia remain the leading causes of CKD (Inker et al., 2014). However, recent studies have highlighted the contribution of environmental and social factors to CKD development. Exposure to extreme heat due to climate change has been associated with an increased risk of CKD, particularly among outdoor workers in tropical and subtropical regions (Vestergaard et al., 2024). Other contributing factors include exposure to environmental toxins, poor water quality, and unsafe working conditions. Furthermore, social and economic disparities, such as limited access to healthcare services and low educational attainment, exacerbate the burden of CKD in low- and middle-income countries (Qin et al., 2024).

Health promotion efforts are essential components of public health strategies aimed at achieving optimal community health. Healthcare facilities play a critical role in implementing promotive, preventive, curative, and rehabilitative interventions in an integrated and continuous manner (Kementerian Kesehatan Republik Indonesia, 2023). Increasing public knowledge and awareness of CKD is crucial to support early detection, prevention, and appropriate disease management (Albuquerque et al., 2022).

Based on these considerations, this study was conducted as a research and community service initiative through a hospital-based health promotion program to assess the level of knowledge regarding chronic kidney disease among family members of inpatients at Haji Provincial General Hospital, East Java.

RESEARCH METHODS

This study employed a one-group pretest–posttest design. A total sampling method was applied, resulting in 26 participants who met the inclusion and exclusion criteria. The inclusion criteria were family members of patients hospitalized in the Multazam 7 inpatient ward at Haji Provincial General Hospital, East Java. Participants who were unable to read and write were excluded from the study.

The intervention consisted of a health education program on chronic kidney disease delivered using PowerPoint presentations prepared by the research team, supported by printed leaflets. The educational content covered basic concepts, risk factors, prevention, and early detection of chronic kidney disease. Participants' knowledge levels were assessed using structured questionnaires administered before (pretest) and after (posttest) the educational session.

Data collected included participants' demographic characteristics, such as age, sex, and educational level, which were analyzed descriptively using univariate analysis. The effectiveness of the educational intervention was evaluated by comparing pretest and posttest knowledge scores. Statistical analysis was performed using a paired t-test with a one-group pretest–posttest approach. All data analyses were conducted using SPSS software, with a significance level set at $p < 0$.

RESULTS AND DISCUSSION

Results

The counseling activity was held on Friday, April 11, 2025, at the Multazam inpatient building on the 7th floor of the Haji Provincial Hospital of East Java, Surabaya, from 10:00 to 11:15 a.m. There were 26 participants, consisting of families of inpatients, who attended the chronic kidney disease education counseling session. The participants were active during the counseling session. Prior to the session, a questionnaire was distributed to assess participants' initial knowledge. At the end of the activity, another questionnaire was

distributed to evaluate their understanding of the session. Interaction between the presenter and participants was dynamic, with several questions raised by participants related to the session topic.

Table 1. Respondent Characteristics

Variable	Category	Frequency (n)	Percentage (%)
Age	< 21 years	2	7.7
	21–30 years	3	11.5
	31–40 years	5	19.2
	41–50 years	3	11.5
	51–60 years	8	30.8
	> 60 years	5	19.2
Gender	Female	14	53.8
	Male	12	46.2
Education	SD	3	11.5
	SMP	5	19.2
	SMA	13	50.0
	S1	4	15.4
	S2	1	3.2

This counseling involved a total of 26 participants distributed based on age, with respondents ranging in age from 18 to 70 years old with an average age of 45.5 years. The majority of participants were in the 51-60 age group, numbering 8 people (30.8%). Meanwhile, the < 21 age group was the smallest, with only 2 people (7.7%). In terms of gender, the majority of participants were female, totaling 14 people (53.8%). In terms of education level, most respondents were high school graduates, totaling 13 people (50%), while the smallest group was Master's degree graduates, totaling only 1 person (3.2%).

Table 2. Pretest and posttest scores

Variable	n	Mean	p-value
Pretest	26	78.46	
Posttest	26	94.62	0.003

Based on the calculation results above, it can be seen that the average pretest score is 78.46 (seventy-eight point four six) and the average posttest score is 94.62 (ninety-four point six two). The statistical test yielded a p-value of 0.003, indicating that there is a statistically significant difference between the pretest and posttest scores ($p < 0.05$). Thus, it can be concluded that there was a significant improvement in the posttest results compared to the pretest after counseling on chronic kidney disease.

Discussion

Chronic kidney disease is defined as kidney damage or an estimated glomerular filtration rate (eGFR) below 60 mL/min/1.73 m² for at least three months, regardless of etiology (Charles & Ferris, 2020; Vaidya & Aeddula, 2025). The Kidney Disease Improving Global Outcomes (KDIGO) classification emphasizes staging based on eGFR and albuminuria to guide early detection and management of CKD (Inker et al., 2014). Despite well-established clinical definitions and staging systems, public understanding of CKD remains limited.

The findings of this study demonstrate that a hospital-based health education intervention significantly improved knowledge about CKD among family members of inpatients. This result is consistent with previous studies reporting inadequate baseline knowledge of CKD among the general population, patients, and caregivers (Albuquerque et al., 2022; Okoro et al., 2020). Studies conducted in Malaysia and other countries have shown

that patients with diabetes mellitus often have limited knowledge of CKD, regardless of comorbidity status or healthcare facility level (Okoro et al., 2020).

Low health literacy has been identified as a major contributing factor to insufficient CKD knowledge (Abdullah et al., 2020). Health literacy refers to an individual's ability to access, understand, evaluate, and apply health information to make appropriate health-related decisions. Therefore, improving communication and education between healthcare providers and the community is essential. The significant improvement observed in this study supports the role of structured health education programs in enhancing CKD-related knowledge, particularly among family members who are often involved in patient care and decision-making.

Public knowledge and awareness are key determinants of the successful implementation of CKD prevention and screening programs. Populations with higher levels of awareness are more likely to recognize early symptoms and risk factors such as hypertension and diabetes mellitus, leading to earlier identification of CKD (Alobaidi, 2021). However, studies in both developed and developing countries continue to report suboptimal public understanding of CKD and its associated risk factors (Albuquerque et al., 2022; Alobaidi, 2021).

Studies from Australia and Saudi Arabia have highlighted limited public awareness regarding kidney function and CKD risk factors. An Australian study reported that fewer than half of participants correctly identified hypertension as a risk factor for CKD, while earlier studies in Saudi Arabia showed very low awareness of CKD status among patients (Alobaidi, 2021). More recent evidence from Saudi Arabia suggests gradual improvement in CKD-related knowledge, although knowledge gaps remain (Mahmoud et al., 2023). The findings of the present study reinforce the importance of continuous, targeted educational interventions to support early detection and prevention of chronic kidney disease.

CONCLUSION

This community service-based hospital health promotion program demonstrated a positive impact on improving knowledge about chronic kidney disease among family members of inpatients at Haji Provincial Hospital, East Java. A statistically significant increase in posttest scores compared with pretest scores ($p < 0.05$) indicates that structured health education using presentations and leaflets effectively enhanced participants' understanding of chronic kidney disease and its prevention.

These findings highlight the importance of hospital-based educational interventions as part of promotive and preventive health strategies to support early detection and disease management. Nevertheless, this study had several limitations, including a small sample size and limited participant representation because the activity was conducted in a single inpatient ward. Future programs are recommended to involve larger and more diverse populations across multiple healthcare settings to strengthen generalizability and to further assess the long-term impact of educational interventions on awareness, behavior change, and early detection of chronic kidney disease.

REFERENCES

- Abdullah, A., May, L. S., Salim, H. S., Jenn, N. C., & Chinna, K. (2020). Health literacy research in Malaysia: A scoping review. *Sains Malaysiana*, 49(5), 1021–1036.
- Albuquerque, A. C. R. M. M., et al. (2022). Population knowledge on chronic kidney disease, its risk factors and means of prevention: A population-based study in Fortaleza, Ceará, Brazil. *Jornal Brasileiro de Nefrologia*, 45(2), 144–151.
- Alobaidi, S. (2021). Knowledge of chronic kidney disease among the population of Saudi Arabia evaluated using a validated questionnaire: A cross-sectional study. *Patient Preference and Adherence*, 15, 1281–1288.
- Aregawi, K., Mekonnen, G. K., Belete, R., & Kucha, W. (2024). Prevalence of chronic kidney disease and associated factors among adult diabetic patients: A hospital-based cross-sectional study. *Frontiers in Epidemiology*, 4, 1–8.
- Charles, C., & Ferris, A. H. (2020). Chronic kidney disease. *Primary Care: Clinics in Office Practice*, 47(4), 585–595.
- Inker, L. A., et al. (2014). KDOQI US commentary on the 2012 KDIGO clinical practice guideline for the evaluation and management of CKD. *American Journal of Kidney Diseases*, 63(5), 713–735.
- Kementerian Kesehatan Republik Indonesia. (2018). *Laporan nasional Riset Kesehatan Dasar (Riskesdas) 2018*. Lembaga Penerbit Balitbangkes.
- Kementerian Kesehatan Republik Indonesia. (2023). *Pedoman nasional pelayanan kedokteran: Tata laksana penyakit ginjal kronik*. Kementerian Kesehatan Republik Indonesia.
- Mahmoud, M. A., et al. (2023). Assessment of public knowledge about chronic kidney disease and factors influencing knowledge levels: A cross-sectional study. *Medicina*, 59(12), 1–12.
- Mallamaci, F., & Tripepi, G. (2024). Risk factors of chronic kidney disease progression: Between old and new concepts. *Journal of Clinical Medicine*, 13(3), 1–12.
- Okoro, R. N., et al. (2020). Kidney disease knowledge and its determinants among patients with chronic kidney disease. *Journal of Patient Experience*, 7(6), 1303–1309.
- Qin, K., Qing, J., Wang, Q., & Li, Y. (2024). Epidemiological shifts in chronic kidney disease: A 30-year global and regional assessment. *BMC Public Health*, 24(1).
- Shahbazi, F., Doosti-Irani, A., Soltanian, A., & Poorolajal, J. (2024). Global forecasting of chronic kidney disease mortality rates and numbers with the generalized additive model. *BMC Nephrology*, 25(1).
- Vaidya, S. R., & Aeddula, N. R. (2025). Chronic kidney disease. In *StatPearls*. StatPearls Publishing.
- Vestergaard, A. H. S., et al. (2024). Risk factor analysis for a rapid progression of chronic kidney disease. *Nephrology Dialysis Transplantation*, 39(7), 1150–1158.