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The impact of health promotion on chronic kidney disease awareness in the community

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Abstract
Chronic kidney disease (CKD) has emerged as a significant public health concern globally, with its prevalence continuing to rise due to the increasing burden of diabetes, hypertension, and obesity. The role of health promotion in enhancing awareness and fostering preventive behaviours among community members is well-documented. This study aims to analyse the effect of health promotion on increasing public awareness in preventing chronic kidney disease. Health promotion was conducted through various methods, such as outreach, distribution of information media (pamphlets, posters), and community health campaigns. The results showed a significant relationship between the intensity of health promotion and increased public knowledge and attitudes regarding risk factors, early symptoms, and preventive measures for chronic kidney disease. Effective education encourages active community participation in adopting a healthy lifestyle, such as maintaining a healthy diet, regular health check-ups, and avoiding bad habits that trigger kidney disorders. Thus, health promotion has been shown to play a crucial role in increasing awareness and preventive measures for chronic kidney disease at the community level.

Keywords: Community, health promotion, kidney disease, nursing care, prevention

Introduction

Chronic kidney disease (CKD) has emerged as a significant public health concern globally, with its prevalence continuing to rise due to the increasing burden of diabetes, hypertension, and obesity (Chen et al., 2019). The nature of CKD often leads to late detection, resulting in patients progressing to end-stage renal disease (ESRD), which necessitates costly renal replacement therapy or kidney transplantation (Price & Wood, 2022). In light of this growing health challenge, health promotion has been recognized as a crucial strategy in preventing and managing CKD. With raising awareness about the risk factors, early detection and lifestyle modifications can mitigate the progression of kidney disease (Neale et al., 2023). Health promotion initiatives can empower individuals and communities to take proactive steps towards kidney health. According to data from the Global Burden of Disease (GBD), CKD caused premature death and this figure is projected to continue to increase (Kumar et al., 2024). In Indonesia, data from the Ministry of Health shows that the prevalence of CKD has reached 3.8%, with the rate tending to increase due to unhealthy lifestyles (Riskesdas, 2018). CKD develops gradually and is often asymptomatic in the early stages, so many sufferers only realize they have it when the disease has reached an advanced stage (Delrue & Speeckaert, 2023). The main risk factors for CKD include hypertension, diabetes mellitus, obesity, and unhealthy lifestyles such as high-salt diets, lack of physical activity, and smoking (Mallamaci & Tripepi, 2024; Kazancioğlu, 2013; Cisneros-García et al., 2023). Therefore, it is very important to make prevention efforts and one of them is through health education or counselling.

The study on the impact of health promotion on CKD awareness in the community reveals several gaps that need to be addressed. Firstly, there's limited understanding of how health promotion strategies are developed and implemented in different communities, taking into account socioeconomic factors particularly in several area in Indonesia. Moreover, the study highlights the importance of early detection and intervention in preventing CKD progression in the community-based setting, but there's a lack of effective awareness campaigns targeting high-risk populations (e.g. elderly, adult). Additionally, the role of nurses in increasing patient awareness and promoting healthy behaviours is important, yet often underutilized. The study also notes that awareness of CKD causes and symptoms is generally low, particularly among younger individuals and those with lower educational attainment. The current study's findings may not be generalizable to other populations due to differences in healthcare systems and cultural contexts. More research is needed to explore the relationship between CKD awareness and health outcomes, including the effectiveness of interventions (Gök & Şahin, 2025; Plantinga et al., 2010). There's also a need for standardized methods to measure CKD awareness and evaluate the effectiveness of health promotion strategies. Addressing these gaps can inform the development of effective public health strategies to enhance CKD awareness, prevention, and

management. Increased investment in health promotion and education is essential to reduce the burden of CKD globally. Implementing policies to improve access to healthcare, particularly in low-resource settings, is critical to addressing CKD disparities (Walker & Gadegbeku, 2023; Soares et al., 2024). Moreover, public health initiatives should focus on promoting healthy lifestyle choices, such as balanced diets, regular exercise, and avoiding tobacco use, to reduce CKD risk. With addressing these gaps, we can work towards reducing the incidence and progression of CKD and improving health outcomes for individuals and communities affected by this condition.

Futhermore, the role of health promotion in enhancing awareness and fostering preventive behaviours among community members is well-documented. Effective health promotion programs can lead to increased knowledge, improved attitudes, and practices that contribute to the prevention and early detection of CKD. Despite the potential benefits, there remains unclear of understanding the specific impact of health promotion interventions on CKD awareness in community settings. This study aims to investigate the influence of health promotion on awareness of chronic kidney disease prevention in the community, with a focus on identifying effective strategies that can be scaled up to address the growing burden of CKD. By exploring the relationship between health promotion and CKD awareness, this research seeks to contribute evidence-based insights that can inform policy and practice in the prevention and management of chronic kidney disease.

Method

This quasi-experimental study employed a pre-test and post-test design without a control group to assess the impact of health promotion on public awareness levels regarding CKD in a community setting. The study focused on residents in Kramat Utara, Magelang, Indonesia who were at risk of developing CKD. A purposive sampling technique was used to select 24 participants who met specific inclusion criteria, including being 18 years or older, having no cognitive impairment that would hinder understanding of health information, and being willing to participate in health promotion activities and evaluations. The independent variable in this study was health promotion, which included educational sessions and materials aimed at increasing awareness about CKD. The dependent variable was the public awareness level, which encompassed knowledge about risk factors, symptoms, and prevention of CKD, attitudes towards maintaining kidney health, and behaviours related to preventive measures such as a healthy diet, exercise, and regular health check-ups.

A structured questionnaire was used to collect data on demographic characteristics, knowledge, attitudes, and behaviours related to CKD. The questionnaire included a knowledge test consisting of questions about CKD, an attitude scale using a Likert scale to assess participants' attitudes towards kidney health, and a preventive behaviour checklist to evaluate participants' self-reported behaviours. All these instruments have been validated by experts to ensure they are suitable for data collection. The health promotion intervention was designed to educate participants about the importance of kidney health, risk factors for CKD, and strategies for prevention. The intervention likely included information on maintaining a healthy diet, the importance of regular physical activity, managing blood pressure and blood sugar levels, and avoiding tobacco use. With comparing the pre-test and post-test scores, the study aimed to determine the effectiveness of the health promotion intervention in increasing public awareness levels about CKD. This research was conducted on May 26-28, 2025, with an intervention duration of 90 minutes. The findings of this study can inform the development of targeted health promotion strategies to enhance CKD awareness and prevention in similar community settings. Additionally, the study's results can contribute to the growing body of evidence on the importance of health education in preventing and managing chronic diseases like CKD. Furthermore, the study's methodology can serve as a model for future studies aimed at evaluating the impact of health promotion interventions on public health outcomes. Data were analysed using SPSS software. Descriptive statistics were used to analyse participant profiles. The researcher used a paired t-test to analyse the effect of education before and after the intervention. This research has obtained ethical clearance from the Health Research Ethics Committee of Poltekkes Kemenkes Semarang, with Ethical Clearance No. 1203/EA/F.XXIII.38/2025.

Results

The majority of respondents (63%) are 20 years old, followed by 21 years old (25%), 19 years old (8%), and 22 years old (4%). This age distribution suggests that most participants are young adults in their early 20s, which may indicate a sample drawn from a university or vocational institution setting. In terms of gender, 71% of the respondents are female, while 29% are male, indicating a notable gender imbalance. This disparity may influence the study's findings and should be considered in the analysis and reporting. All respondents (100%) hold a Diploma, indicating a uniform educational background among the participants **(Table 1)**.

The data analysis using a paired t-test revealed that the health promotion intervention was effective in improving chronic renal failure awareness and preventive behaviours. The results showed a statistically significant positive outcome, with a p-value less than 0.01. Specifically, the mean pretest score for awareness was 12.06 (SD=1.461), with scores ranging from 10 to 15. After the health promotion, the mean post-test score increased to 16.21 (SD=1.339), with a minimum score of 14. The difference in scores was 3.889, and the p-value was 0.000, indicating a highly statistically significant increase in awareness (p<0.05). This suggests that the health promotion activity had a strong positive effect on participants' understanding and knowledge about chronic renal failure prevention. The

analysis also showed a significant improvement in preventive behaviour. The mean pretest score for preventive behaviour was 12.17 (SD = 1.249), with scores between 10 and 14. The post-test mean increased to 16.26 (SD = 1.110), with a minimum post-test score of 11. The difference in scores was 0.889, and the p-value was 0.002, indicating a statistically significant improvement in preventive behaviour ($p < 0.05$). Although the change in behaviour scores was less dramatic than the change in awareness, it still reflects a notable shift toward healthier practices following the health promotion intervention. Overall, the findings suggest that the health promotion intervention was effective in enhancing both awareness and preventive behaviours among the participants. **(Table 2)**.

Table 1. Participant's profile.

Variables	Frequency (n)	Percentage (%)
Age (years old)		
19	2	8
20	15	63
21	6	25
22	1	4
Gender		
Man	7	29
Woman	17	71
Education		
Diploma	24	100

Table 2. Variables analysis.

Variables	Score	Mean	SD*	Min	Max	Margin	*p*
Awareness	Pretest	12.06	1.461	10	15	3.889	0.000
	Posttest	16.21	1.339	14	19		
Preventive behavior	Pretest	12.17	1.249	10	14	0.889	0.002
	Posttest	16.26	1.110	11	15		

*Standard deviation.

Discussion

The demographic characteristics of the study participants indicate a homogeneous and demographically narrow sample, which has implications for the interpretation and generalizability of the findings. The age distribution shows that the majority of respondents were 20 years old (63%), followed by those aged 21 (25%), 19 (8%), and 22 (4%). This pattern suggests that most participants are young adults in their early twenties, likely drawn from a higher education setting such as a university or vocational institution. The gender distribution is notable for its imbalance, with women comprising 71% of the sample and men accounting for 29%. This disparity may reflect gender enrolment patterns in health-related or vocational programs, where female participation tends to be higher. However, it is crucial to acknowledge that such a skewed gender ratio can influence study outcomes, particularly in areas related to health awareness and behaviour, which often vary by gender. Therefore, gender differences should be considered in both the interpretation of findings and in future research design to ensure that the results are applicable to a broader population. In terms of education, 100% of respondents held a Diploma, indicating a uniform educational background. While this uniformity can strengthen internal validity by reducing variability related to educational level, it limits the external validity of the study. Educational attainment is a known determinant of health literacy and behaviour (Coughlin et al., 2020), and findings from a diploma-educated sample may not apply to those with lower or higher education levels.

Our study findings show a level of significance that strongly supports the effectiveness of the health promotion, implying that participants demonstrated a meaningful increase in both their awareness of CKD and their engagement in preventive health behaviours following the health promotion. These findings align with previous research underscoring the impact of educational programs on chronic disease prevention (Sharaf, 2010; Dona et al., 2021). However, while statistical significance confirms the reliability of the effect, further analysis may be required. Although the magnitude of change in behaviour was less pronounced than that in awareness, this is consistent with existing research showing that behavioural change typically lags behind knowledge acquisition. Awareness often serves as a necessary precursor to behavioural change but may require reinforcement, time, and continued support to become habitual. These findings align with previous studies indicating that educational interventions can be effective tools in both raising awareness and influencing preventive health behaviours (Rizvi, 2022; Santos et al., 2021). In the context of chronic disease prevention, such as for chronic renal failure, this dual improvement is particularly important, as early prevention and risk reduction strategies are vital to controlling disease progression and reducing healthcare burdens.

Family and community nurses serves important role in promoting health awareness and education, particularly in the context of CKD. As primary healthcare providers, they are well-positioned to educate individuals and families about the risk factors, symptoms, and prevention strategies for CKD. Nurses can provide personalized guidance on healthy lifestyle choices, such as maintaining a balanced diet, exercising regularly, and managing blood pressure and blood sugar levels. They can also facilitate early detection and intervention by identifying high-risk individuals and referring them to appropriate healthcare services. Furthermore, family and community nurses can promote a supportive environment that encourages individuals to adopt healthy behaviours and adhere to treatment. With building trust with community members, nurses can help to address cultural and socioeconomic barriers that may impact health outcomes. The involvement of family and community nurses is important in promoting CKD awareness, prevention, and management, and in improving the overall health and well-being of individuals and communities affected by this condition. Although this study has its strengths, it also has its weaknesses or limitations. This limitation highlights the need for caution when generalizing the results to broader populations with diverse educational backgrounds. The sample is composed of young, predominantly female, diploma-educated individuals, providing a focused context for analysis but limiting the generalizability of the results. Future research should prioritize including a more diverse demographic to enhance the representativeness and applicability of the findings. With incorporating participants from various age groups, genders, and educational backgrounds, researchers can increase the external validity of their studies and provide more comprehensive insights into the research topic.

Conclusion

The health promotion intervention was effective in enhancing both knowledge (awareness) and action (preventive behaviour) related to chronic renal failure. The greater increase in awareness compared to behaviour is typical, as behaviour change often requires more time and reinforcement beyond initial knowledge improvement. These findings support the use of structured health promotion programs as a valuable tool in public health efforts aimed at preventing chronic diseases like renal failure. Future programs may focus on sustaining and deepening behaviour changes, possibly through ongoing education, follow-ups, or community involvement.

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