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ORIGINAL ARTICLE

The Effect of teach-back educational method on self-management in hemodialysis patients

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ABSTRACT

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Introduction: Patients with chronic kidney disease undergoing hemodialysis may experience a decline in physical and psychological conditions such as increased risk of depression and non-compliance in undergoing therapy. Therefore, proper self-management is needed so that patients can control their disease. Teach-back education is one interactive method that can be used to improve self-management of hemodialysis patients.

Objectives: The purpose of this study was to determine the effect of the teach-back educational method on self-management in hemodialysis patients.

Methods: This study used a quasi-experimental design with a pre-test and post-test design, for 137 end-stage renal disease patients undergoing hemodialysis at Wava Husada Hospital. The duration of the training was 3 sessions and the time of each session ranged from 45 minutes to one hour. To collect data from patients, a demographic questionnaire and the Hemodialysis Self-management Instrument-18 (HDSMI-18) were used to assess patient self-management before and after the intervention. A significance level of 5% was established for the analysis.

Results: The overall self-management score before intervention was 53.47 ± 8.59 . The total score of self-management after intervention was 57.15 ± 8.94 . Data analysis indicated that the difference in the mean score of self-management before and after teach-back education was significant ($p = 0.000$). Among the dimensions of self-management, there was a significant difference for two dimensions including self-care and problem-solving before and after teach-back education ($p = 0.000$).

Conclusions: The teach-back educational method was effective in improving self-management in hemodialysis patients. It improved self-management in the dimensions of self-care and problem-solving. It is recommended that nurses in hemodialysis units implement teach-back education as a routine practice in caring for hemodialysis patients.

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1. Introduction

Chronic kidney disease is a growing global health problem and one of the most prominent causes of mortality and morbidity in the 21st century (Bello et al., 2022; Kovesdy, 2022). The prevalence of CKD is increasing globally and is projected to become the fifth most common disease by 2040 (Borg et al., 2023). Global data shows that there are around 850 million people with CKD, most of whom live in low-income countries and lack access to health services (Bello et al., 2022; Francis et al., 2024). In Indonesia, the prevalence of CKD tends to increase, from 2.0 per mile (⁰/₀₀) in 2013 to 3.8 per mile (⁰/₀₀) in 2018 (Hustrini et al., 2022).

CKD is a progressive disease and can develop into end-stage kidney disease (ESRD) which requires hemodialysis therapy to replace kidney function (Iqbal et al., 2021; Wati et al., 2021). Hemodialysis is very beneficial for patients because the kidneys are vital organs that function to

maintain homeostasis (Rini et al., 2021). Although hemodialysis has been shown to increase the life expectancy of CKD patients, this therapy can also cause complications (Abbasi Abianeh et al., 2020). The challenges experienced by hemodialysis patients include a decline in physical and psychological conditions such as an increased risk of depression and non-compliance in undergoing regular hemodialysis (Mailani et al., 2023). Increasing awareness and understanding of the overall burden of CKD is needed, which can lead to increased knowledge and involvement in managing the disease independently (Pakaya et al., 2021). This can be improved by encouraging patients to organize their treatment plans and providing patients with media to carry out treatment (Mailani et al., 2023).

Currently, the emerging trend in nursing care for chronic diseases such as CKD with hemodialysis is self-management (Mailani et al., 2023). Self-management is a collaborative activity between patients and health workers that aims to minimize the impact of chronic diseases on the patient's health status and function. The main components of self-management are information management, medication, psychological symptoms, lifestyle, and social support (Husain et al., 2020). Self-management allows patients to control the disease even though the patient's emotional status influences it (Natashia et al., 2019). Self-management can have a positive impact on CKD patients undergoing hemodialysis, for example in terms of improving quality of life and reducing complications. However, the implementation of self-management in Indonesia is still far from ideal, resulting in high cases of complications and death in CKD patients (Mega Noviana & Zahra, 2022).

Given the importance of self-management in CKD patients undergoing hemodialysis, efforts are needed to improve self-management behavior, one of which is by providing education. Patient education is one of the most important tasks of nurses. A nurse can play an important role in teaching the skills needed by hemodialysis patients to deal with various conditions. Effective education requires the right approach to facilitate appropriate interpersonal communication in meeting patient needs (Abbasi Abianeh et al., 2020).

One of the educational methods that can be applied is teach-back education. Teach-back education is an individual educational method using a comprehensive strategy that can help health workers identify patient needs related to their care process (Borzou et al., 2020). The teach-back educational method requires the right communication strategy so that educational goals can be achieved. This method is often used by health workers in explaining the patient's medical condition, providing relevant information, and providing simple advice so that it is easier for the patient to understand. Then, the patient is asked to repeat the information given using his/her own words. This allows health workers to assess or evaluate the patient's understanding of the information provided (Cheng et al., 2023).

Teach-back education is an interactive method that allows patients to apply the material they have learned when needed (Abbasi Abianeh et al., 2020). Previous studies have shown positive results in various areas. The results of Cheng et al.'s research show that the use of the re-teaching method can significantly improve the health literacy of postpartum mothers (Cheng et al., 2023). Other studies using the same method also showed significant results on the self-care behavior of diabetic patients with diabetic ulcers (Satehi et al., 2021). While the teach-back educational method has proven effective in enhancing chronic disease self-management, its application in hemodialysis units in Indonesia remains limited.

Considering the importance of improving self-management in CKD patients undergoing hemodialysis, this study needs to be conducted to determine the effectiveness of the teach-back educational method on self-management of CKD patients undergoing hemodialysis.

2. Methods

This study used a quasi-experimental design with a pre-test and post-test design approach. The population of this study was 197 hemodialysis patients at Wava Husada Hospital. The sample consisted of 137 hemodialysis patients using purposive sampling according to the established criteria. The inclusion criteria in this study were willing to be a respondent and fill out an informed consent form, Age > 18 years, not have other chronic diseases such as stroke, nervous

system disease, heart attack, severe heart failure, cardiomyopathy, and malignant tumors, do not have psychological disorders and cognitive disorders. The exclusion criteria in this study were patients who did not want to continue the study, patients who were dying or patients who were transferred to other health centers, and patients who did not participate in one of the 3 training sessions.

The research was conducted at the Wava Hospital which was carried out on May 14 - July 17, 2024. This research has received a letter of ethical test results from KEPK Wava Husada Hospital No. SDN/2024/04/1175.

The intervention used in this study was the teach-back educational method using a self-care management approach in hemodialysis patients. The intervention was divided into 3 sessions with each session consisting of 45-60 minutes. The educational material provided in the first session was the concept of ESRD (signs, symptoms, risk factors, and complications) and the concept of hemodialysis. The second session was about nutritional management and physical exercise management. The third session was about fluid management, and stress management in hemodialysis patients. The teach-back educational method has been carried out in several steps. First, the researcher explains/demonstrates a new concept. Second, assess the patient's memory & understanding by asking the patient to re-teach the concept in his/her own words or demonstrate it. Third, clarifies points missed by the patient & teaches them again using different words. Fourth, assess the patient's memory & understanding by asking the patient to re-teach the concept in his/her own words/demonstrate it. Finally, the patient remembers and understands/demonstrates mastery.

This study used 2 questionnaires. The first questionnaire is a demographic data questionnaire to determine age, gender, education, occupation, income, and underlying disease. The second questionnaire is the Indonesian version of the Hemodialysis Self-management Instrument-18 (HDSMI-18). This questionnaire consists of 18 statements covering 4 dimensions, namely partnership (four items), self-care (six items), problem-solving (five items), and emotional management (three items). Each statement consists of 4 answer choices, namely 1=never, 2=rarely, 3=sometimes, and 4=always. Overall, this questionnaire has a score range from 18 to 72. A higher rating indicates improved patient self-management and the validation of all questions in this instrument was >0.9 (Chen et al., 2021). Also, in the study of Mailani et al. (2023) Cronbach's alpha of the total score of Indonesian versions HDSMI-18 was in the 0.82-0.88 range, indicating good reliability.

Data analysis in this study used univariate analysis to analyze the characteristics of respondents and self-management of hemodialysis patients before and after the intervention. Furthermore, data normality tests were carried out using the Kolmogorov-Smirnov statistical test. The data distribution was not normal, so a non-parametric statistical test was used using the Wilcoxon test to determine the effect of the teach-back educational method on self-management of hemodialysis patients. The confidence interval was 95% and the significance level was 5%.

3. Results and Discussion

The data of 137 patients were studied. Most of the participants were aged 56-65 years (29.9%), females 90 (65.7%), elementary 46 (33.6%), unemployed 106 (77.4%), low income 126 (92%), and married 117 (85.4%). Also, most of them had a history of underlying disease 94 (68.6%). Table 1 shows the demographic data of the patients.

Table 1 Demographic data of the hemodialysis patients

| Characteristics of participants | Frequency (f) | Percentage (%) |
|---------------------------------|---------------|----------------|
| Age (years) | | |
| 17-25 | 7 | 5.1 |
| 26-35 | 10 | 7.3 |
| 36-45 | 27 | 19.7 |
| 46-55 | 40 | 29.2 |
| 56-65 | 41 | 29.9 |

| | | |
|---------------------------|-----|------|
| >65 | 12 | 8.8 |
| Sex | | |
| Male | 47 | 34.3 |
| Female | 90 | 65.7 |
| Education | | |
| No school | 1 | 0.7 |
| Elementary | 46 | 33.6 |
| Junior | 38 | 27.7 |
| High | 38 | 27.7 |
| College | 14 | 10.2 |
| Occupation | | |
| Employed | 31 | 22.6 |
| Unemployed | 106 | 77.4 |
| Income | | |
| Low | 126 | 92.0 |
| High | 11 | 8.0 |
| Marital status | | |
| Married | 117 | 85.4 |
| Single | 10 | 7.3 |
| Widowed | 10 | 7.3 |
| Underlying disease | | |
| Yes | 94 | 68.6 |
| No | 43 | 31.4 |

Table 2. Self-management of participants before and after teach-back educational method

| Dimensions | Pre-test | Post-test | p-value |
|-------------------------|--------------|--------------|---------|
| | Mean ± SD | Mean ± SD | |
| Partnership | 12.06 ± 3.80 | 12.21 ± 3.83 | 0.226 |
| Self-care | 17.57 ± 2.56 | 20.12 ± 2.04 | 0.000 |
| Problem-Solving | 13.87 ± 3.38 | 14.94 ± 3.51 | 0.000 |
| Emotional Management | 9.98 ± 1.91 | 9.88 ± 1.94 | 0.227 |
| Overall Self-management | 53.47 ± 8.59 | 57.15 ± 8.94 | 0.000 |

In assessing self-management patients before intervention, data analysis showed that the highest mean of score was related to self-care (17.57 ± 2.56) and the least was related to emotional self-management (9.98 ± 1.91). The overall self-management score before intervention was 53.47 ± 8.59. In the assessment of dimensions of self-management after the teach-back educational method, the highest mean score was related to self-care (20.12 ± 2.04), and the least was related to emotional management (9.88 ± 1.94). The total score of self-management after intervention was 57.15 ± 8.94 (Table 2). Data analysis indicated that the difference in the mean score of self-management before and after the teach-back educational method was significant (p = 0.000). Among the dimensions of a questionnaire, there was no significant difference for two dimensions including partnership and emotional management before and after teach-back education (p > 0.05).

The results of this study were to determine the effectiveness of the teach-back educational method in enhancing self-management among hemodialysis patients. Data analysis showed that the mean score of self-management had a significant difference before and after the teach-back educational method (p = 0.000). The significant improvement in self-management scores following the intervention supports the growing body of evidence that teach-back is a valuable educational strategy in healthcare, particularly for patients managing chronic conditions such as chronic kidney disease (CKD). This finding aligns with previous research by (Xia & Wang, 2024),

which highlighted teach-back effectively enhances patients' knowledge related to hemodialysis, self-efficacy, and self-management skills.

The teach-back educational method is particularly effective because it emphasizes patient understanding and retention of health information to achieve specific health-related outcomes (Talevski et al., 2020). By asking patients to explain what they have learned in their own words, teach-back ensures that they have correctly understood the instructions, which helps minimize the risk of miscommunication (Anderson et al., 2020). This method is especially valuable for hemodialysis patients, where understanding medication, fluid intake restriction, and dietary limitation is crucial to their health outcomes (Ghanbari et al., 2017). Additionally, it enhances both the comprehension of health information and the development of self-management skills in chronic kidney disease patients (M. H. Jagodage et al., 2024). This educational approach is suitable for patients with low literacy levels, as was the case for participants in this study. Moreover, the teach-back educational method is highly effective in helping patients retain information (Abbasi Abianeh et al., 2020)

The result of this research aligns with prior studies, as evidenced by Borzou et al. (2020), who found that the use of teach-back education positively impacted the knowledge, behavior, and attitudes of hemodialysis patients initially harboring pessimistic views toward their treatment and condition. The influence on attitude was notably more significant than that of group discussions. This indicates that the utilization of teach-back education not only enhances cognitive comprehension but also deals with emotional and psychological obstacles, nurturing a more optimistic perspective and encouraging proactive self-management behaviors. Furthermore, the effect of teach-back on communication strategies enhances treatment adherence among hemodialysis patients, as demonstrated by Alilu et al. (2024). This intervention has the potential to enhance satisfaction levels, improve patient perspectives and understanding, reduce post-discharge readmissions, enhance disease self-management and knowledge, and ultimately improve Health-Related Quality of Life (Yen et al., 2019; Shamsizadeh et al., 2021).

This study demonstrated the positive impact of the teach-back method in enhancing self-care and problem-solving skills among hemodialysis patients. The data analysis revealed significant improvements in the mean scores of self-care and problem-solving—key dimensions of self-management—before and after the teach-back intervention ($p = 0.000$). These findings underscore the effectiveness of teach-back education in promoting better self-care practices. Self-care is needed to improve health and well-being. Patients must be aware of their illness and understand how to treat themselves (Nafisah, 2023). Increased awareness of self-care is particularly important as it can help reduce the risk of rehospitalization (Ha Dinh et al., 2016). Moreover, teach-back education has been proven to be both effective and feasible across all levels of care—primary, secondary, and tertiary—by improving the self-management skills and knowledge needed for young individuals or their parents/guardians to manage chronic illnesses (McCrossan & Ferris, 2021). Similarly, the teach-back method has shown its effectiveness in helping patients better understand self-care and manage their conditions at home (Yen et al., 2019).

By using the teach-back education method, nurses can assess patient understanding, and re-teach or modify the teaching if understanding has not been demonstrated. Patients can understand that health information has a significant impact on their behavior and health outcomes (Yen et al., 2019). However, effective teaching requires sufficient and specific time for nurses to teach. Whereas nurses do not have enough time to teach patients because of the many tasks that must be completed. According to researchers, there needs to be a special nurse educator who is tasked with providing education related to the self-management of hemodialysis patients. Nurses need to create an education schedule for each hemodialysis patient.

This study had several limitations. Data was collected from a single hospital, which restricted generalizability to a broader population of hemodialysis patients. Moreover, the number of educational sessions was limited, making it difficult to evaluate the long-term effects of the teach-back educational method. Further research is needed to further explore the

implementation of technology-based educational methods in nurses' routines, assess long-term benefits, and assess cost-effectiveness compared to other health education methods.

4. Conclusion

The results of the study showed that there were differences in self-management before and after the intervention of the teach-back educational method in hemodialysis patients. This shows that the teach-back educational method has proven effective in improving self-management in hemodialysis patients. The teach-back educational method improved self-management in the dimensions of self-care and problem-solving. Hemodialysis patients became more aware of how to care for themselves, and address problems related to their health conditions during hemodialysis. The healthcare system increasingly prioritizes patient-centered care, the teach-back educational method demonstrated significant potential to improve patient self-management. Therefore, it is recommended that nurses in hemodialysis units implement teach-back education as a routine practice in caring for hemodialysis patients. Further researchers can use the teach-back educational method to improve self-management with more frequent sessions and long-term evaluation.

Ethics approval and consent to participate.

This research has received approval from the Research Ethics Commission of Wava Husada Hospital, number No. SDN/2024/04/1175. All participants in this study were provided with both verbal and written explanations regarding the study. The researcher ensured that the patients understood their participation was voluntary and informed them that they could withdraw at any time without any impact on their health. All information was kept confidential, and the study's results were presented for academic purposes only.

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