

## Summary of Self-Management Program for Patients with CKD: A Systematic Review

Hendrik Prayitno Luawo, Yulia Indah Permata, Ulfa Nur Rohmah, Waluyo Waluyo, Saskiyanti Ari Andini

Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

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### CORRESPONDING AUTHOR

Yulia Indah Permata  
[yulia.indah.permata-2018@fkn.unair.ac.id](mailto:yulia.indah.permata-2018@fkn.unair.ac.id)  
Faculty of Nursing,  
Universitas Airlangga

### ABSTRACT

**Introduction:** Self-management is an important step in preventing and impeding the progression of chronic kidney disease. The effective support and encouragement of self-management in patients with chronic kidney disease is therefore required. The aim of this study was to examine the effectiveness of a self-management program improving quality of life on patients with CKD.

**Methods:** The literature review used the keywords 'chronic kidney disease', 'self-management program' and 'quality of life'. From the article search using "AND" as well, only 8 studies met the inclusion criteria. Across the 8 studies, 592 participants and a mean 147 per trial were included within the middle age group. The types intervention were a heterogenous.

**Result:** CKD self-management program, renal education and exercise intervention, the EASE program, the KDE program, and a CKD Educational Program recommended to improve quality of life.

**Conclusion:** The education and exercise intervention had a positive effect on the physical and mental health and well-being of the patients with CKD. Therefore, early education about renal disease improves quality of life and treatment outcomes in patients with CKD who are on dialysis.

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## 1. INTRODUCTION

Chronic Kidney Disease (CKD) is defined based on the amount of kidney damage or glomerular filtration rate (GFR 60ml / min / 1.73 m<sup>2</sup>) for ≥3 months. It is classified into 5 stages / stages based on the glomerular filtration rate (Kasiske et al., 2010). Chronic Kidney Disease (CKD) is a disorder of progressive and irreversible kidney function, in which the body fails to maintain its metabolism and fluid and electrolyte balance, which causes uremia (Smeltzer, Bare, Hinkle, & Cherver, 2010).

The National Institute of Diabetes Mellitus and Digestive and Kidney Disease (NIDDK) states that between 1980 and 2009, the average prevalence of CKD in the US increased by nearly 600% from 290 cases up to 1,738 cases per million population. The number of deaths of CKD patients also showed an increase from 10,478 in 1980 up to 90,118 in 2009 (Clearinghouse, 2012) The speech delivered by the Indonesian Minister of Health, Nila F Moeloek, on World Kidney Day in 2018 stated that CKD was in sixth place as the cause of deaths in Indonesia with a

prevalence of kidney failure of 2% (499,800 people) (Risksedas, 2013).

The inability of the kidneys to dispose of the waste products through the urine can cause endocrine, metabolic and electrolyte disruption and acid-base disorders, so hemodialysis or a kidney transplantation is needed for patient survival (Smeltzer et al., 2010). Hemodialysis therapy is an expensive life-saving procedure that is familiar because it is most often carried out in the treatment of CKD patients. It is technology used for removing the body's metabolic waste and toxins in the body through semi-permeable membranes. It acts as a blood separator with dialysate fluid in the dialyzer through the process of diffusion, osmosis or ultrafiltration (Smeltzer et al., 2010). More than 70% of countries report that at least 80% of patients are using hemodialysis therapy (Clearinghouse, 2012).

CKD patients who are undergoing hemodialysis have complex problems with their physical, psychological, social, economic and spiritual condition. The problems that are felt by post-hemodialysis patients include weakness, fatigue, dry lips, and itching on the skin that affects their physical and mental functions. The symptoms also disrupt the patient activities. Complications both physically and psychologically certainly become a disruption in the self-care done independently by the patients with chronic renal failure undergoing hemodialysis. CKD patients need self-care skills. At present, the patient's self-care capabilities in the community have become at the centre of the world's attention along with the increasing incidence rate of chronic diseases in the world. The condition and increase in medical expenses and the insufficient number of educators also contributes to the important reasons behind self-care being increased as an effort to improve the quality of life for patients with chronic diseases, in addition to that of their family and community. Orem believes that every individual has the natural ability

to care for himself and that the nurse must focus on the impact from disease on this ability in the patients.

Orem's concept has been explained clearly; individuals with certain conditions and ages according to their basic conditions have the instincts and abilities of their bodies to care for, in addition to protect, control, minimize and manage negative impacts in order to live optimally in terms of their life, health, recovery from illness or trauma and coping with its effects.

Self-care management in the context of CKD patients' needs to get attention from nurses. Orem said that the purpose of the role of nurses is to help the patients to conduct self-care. In addition, they can help to determine the ability and willingness of the hemodialysis CKD patients in relation to the self-care management help, to encourage them actively in the treatment process and to improve their quality of life.

The purpose of this systematic review was to evaluate the effectiveness of the self-management programs as an effort to improve the self-care, patient knowledge, self-regulation and self-efficacy of the CKD patients so as to improve the quality of life of the patients. This review will discuss the short concept of the self-management program, the results of the self-management program and the patient's perspective on self-management programs.

## 2. METHOD

The design of the 16 articles reviewed included 2 RCTs, 2 descriptive, 1 meta-analysis, 3 systematic reviews, 2 integrative reviews, 2 systematic reviews and meta-analyses, 3 pre-experiments and 1 qualitative study. The literature search and selection criteria began with used the PICO framework. The population was Chronic Kidney Disease (CKD) patients with age  $\geq 18$  years (humans, not animals). Interventions in the form of self-management programs are expected to improve self-regulation ability, self-efficacy and quality of life for CKD patients. The article design was not limited to RCTs due to the limited number of articles found. The

keywords used were chronic kidney disease, self management program, education, exercise, quality of life, self-care in the ProQuest, Science Direct, Scopus, SpringerLink, PubMed, Google Scholar and Elsevier databases. Searching for English-language journals was limited to the last 10 years from 2008 to 2018. The search results obtained 26 articles that were then selected according to the inclusion criteria. The selection criteria for the articles were that they had to include CKD in adult humans and that they referred to or contained self-management programs.

### **3. RESULT**

Self-management is the ability to manage life with chronic disease, which involves monitoring the condition, following the care plan and maintaining their quality of life (Barlow, Wright, Sheasby, Turner, & Hainsworth, 2002). Self-management refers to the patient's responsibility and ability to live a healthy lifestyle. The concept of self-management is built on the individual's awareness of the importance of self-care in response to the development of chronic diseases. In addition, the health care providers must share and provide information about care decisions to the patients (Richard, 2006). The self-management of patients with CKD is defined as the patient's positive efforts involved in monitoring the health and symptoms of the disease, utilizing the best available medical resources, living their preferred healthy lifestyle and minimizing the possibility of deteriorating health conditions (Curtin & Mapes, 2001).

Patients with CKD must be confident and able to manage their long-term health conditions. Patients with CKD who apply self-management are able to maximize their ability to withstand adverse health conditions and to slow down their deteriorating health condition. Patients who effectively prevent the emergence of medical complications can achieve better physical and mental well-being, a better quality of life, and they can lead a normal preferred life (Novak, Costantini, Schneider, & Beanlands, 2013).

### **Diabetes Outcome from the Self-Management Program**

#### **Self-regulation**

Based on the results of the C-C study (Lin et al., 2013), the effects of theory-based education programs can contribute to self-regulation. Through self monitoring, systematic observation and the recording of daily activities, the subjects can identify the factors that cause health problems. When the subject's health status improves through behavioral regulation, positive feedback is obtained which can increase their self-confidence in terms of managing the disease. Self-regulation mechanisms support the effectiveness of educational programs in terms of self-efficacy and behavior change among the patients with CKD.

#### **Self-Efficacy and Self-Management Behavior**

A study by H. Joboshi and M. Oka (Joboshi & Oka, 2017) found there to be a statistically significant difference in the scores for self-efficacy ( $p = 0.035$ ,  $r = 0.27$ ) and self-management behavior ( $p = 0.026$ ,  $r = 0.29$ ). For patients with CKD, self-management requires a higher level of self-efficacy to clarify any obstacles and to determine ways to overcome these obstacles. In general, CKD patients are better able to live life because of their inner motivation and the support of the closest person to them, rather than because of the self-management factors.

#### **Quality of life**

E.R. Lazarus (Lazarus, 2018), in his study, said that the quality of life and knowledge of the patients with CKD can be influenced by interventions in the form of education and physical training. Interventions through education and sports have proven to be positive factors in the physical and mental health of CKD patients undergoing hemodialysis. Patients with CKD are encouraged to accept responsibility for their health and self-care independently. CKD patients who receive interventions in the form of education and regular exercise report that their quality of life is subjectively better, including in terms of social functions and roles and emotional management.

Table 1. Self-Management Program Intervention Protocol for CKD Patients

Session	Purpose for participants	Program Activities
The first week	<ol style="list-style-type: none"> <li>1. Understand the importance of self-management in CKD</li> <li>2. Understand the process of self-regulation in disease management</li> </ol>	<ol style="list-style-type: none"> <li>1. Explain the importance of controlling CKD by motivating the patients to learn self-management</li> <li>2. Watch a video about self-management in CKD</li> <li>3. Identify the stage of self-regulation as displayed by the role model in the video</li> <li>4. Summarize the self-regulation process that the participants will display</li> </ol>
Second week	<ol style="list-style-type: none"> <li>1. Propose personal problems that might arise</li> <li>2. Can use a self-monitoring workbook</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss potential problems that can arise in the self-management of CKD</li> <li>2. Guiding the participants to prioritize any problems that arise</li> <li>3. Demonstrate how the participants should observe and record daily activities using self-monitoring workbooks while at home</li> <li>4. Ask the participants to demonstrate self-monitoring abilities</li> <li>5. Discuss the process of monitoring yourself to make telephone contact on a weekly basis</li> </ol>
The third week	<ol style="list-style-type: none"> <li>1. Determine the goals that can be completed independently</li> <li>2. Build specific strategies to achieve the goals</li> </ol>	<ol style="list-style-type: none"> <li>1. Participants share the experience of self-monitoring carried out in the previous week</li> <li>2. Discuss the differences between participant behavior and the behavior patterns that are ideal for disease management in the group</li> <li>3. Identify personal goals and discuss the potential strategies to achieve the goals</li> <li>4. Select the award that the participants want when they successfully reach the goal</li> <li>5. Discuss the strategy for developing participants by telephone every week</li> </ol>
The fourth week	<ol style="list-style-type: none"> <li>1. Evaluate the effectiveness of the strategy to achieve their goals</li> <li>2. Rebuilding or developing a new plan</li> </ol>	<ol style="list-style-type: none"> <li>1. Participants share and discuss the experience of the self-regulation carried out in the previous week</li> <li>2. Guide the participants to review their progress to reach the goal</li> <li>3. Discuss the obstacles and difficulties in carrying out the plan</li> <li>4. Analysis of the possible reasons for failing to reach the goal</li> <li>5. Develop new strategies to achieve goals by group brainstorming</li> <li>6. Track the progress of the participants with new personal plans by phone every week</li> </ol>
Fifth week	<ol style="list-style-type: none"> <li>1. Evaluate the effectiveness of the new strategy</li> <li>2. Get to know the results of their performance</li> </ol>	<ol style="list-style-type: none"> <li>1. Evaluate the effectiveness of the new strategy</li> <li>2. Participants share their self-regulation experiences</li> <li>3. Give awards to the participants for their effort to learn self-regulation</li> <li>4. Summarize the important points of self-management in CKD</li> <li>5. Guide the participants to consider the next steps to meet new goals and make new plans</li> </ol>

Education and physical training interventions have the potential to improve quality of life and to influence other outcomes.

**SCr and eGFR**

A decrease in eGFR or an increase in SCr indicates the development of kidney damage. In the C-C study, Lin, Et al. (Lin et al., 2013) found that the average SCr level at 12 months was lower than the initial value while the eGFR level remained stable. From these results, it can be concluded that theory-based education in self-management programs appears to have slowed down the damage or decrease in kidney function. The study was conducted by Enworom C.D et al (Enworom & Tabi, 2015) states that kidney disease education program participants experience a slower decline in kidney function as measured by GFR. Participants in

the kidney disease education program had significantly lower GFR (19.6 mL / minute / 1.73 m2), compared to participants who did not take part in the 22.5 mL / minute / 1.73m2 kidney disease education program.

**Patient Perspectives on Self-Management Programs**

People with CKD recognize self-management as a process that is implemented in everyday life. People with CKD want practical help to integrate self-management into their lives and self-management programs aim to support the patients in them being responsible for disease management (Havas, Bonner, & Douglas, 2016).

#### 4. DISCUSSION

The concept of self-management is one's awareness of the importance of self-care for chronic diseases and one's involvement in the disease itself. Self-management programs can improve emotional management, medical outcomes, and the quality of life of the patients related to health.

An individual with good self-regulating abilities will get more information that can be used to form a self-management strategy to achieve the desired results. Health care providers must motivate the CKD patients to manage their own disease by learning self-regulation strategies to prevent the development of CKD. Continuous behavior change is the key to the success of disease management (Lin et al., 2013). Effective communication with patients about the benefits of regular exercise, the importance of regular dialysis, fluid management, diet plans and encouragement by the nurses will help the patients to overcome discomfort, thus helping them to have a life that is close to normal and a better quality of life overall (Joboshi & Oka, 2017).

#### 5. CONCLUSION

Knowledge Patients with CKD who apply self-management are able to maximize their ability to withstand adverse health conditions and to slow down their deteriorating health conditions. Patients who effectively prevent the emergence of medical complications can achieve better physical and mental well-being, a better quality of life, and they can go on to lead a normal, preferred life.

CKD patients who receive interventions in the form of education and regular exercise report that their quality of life is subjectively better, including in terms of their social functions and roles, and emotional management. Education and physical training interventions also have the potential to influence other outcomes. The next researchers should be able to improve the treatment in the form of a self-management program for patients with CKD by evaluating the qualitative data.

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